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OKLAHOMA COORDINATE SYSTEM USER'S GUIDE

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GEOMET, Incorporated

for the

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Region 6

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The report describes a single-zone coordinate system covering the State of Oklahoma. Tables and formulas necessary to relate the Oklahoma Coordinate System (OCS) to other coordinate systems used in Oklahoma are provided. The OCS is based on a Lambert conformal conic projection of the earth's surface. Conversion between coordinate systems can be performed manually or through a computerized system. Listings of computer software are provided.

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PREFACE

This document describes the Oklahoma Coordinate System, a single-zone coordinate system covering the State of Oklahoma developed under the U.S. Environmental Protection Agency Contract Number 68-02-2582. This is intended to be a comprehensive manual on the system, including the provision of tables and formulas necessary to relate OCS coordinates to other coordinate systems used in Oklahoma. The coordinate system and accompanying materials and User's Guide were developed to aid State and local air quality control personnel in their work aimed at improving and maintaining air quality within Oklahoma.

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Section 1.0

INTRODUCTION

The location of the State of Oklahoma ranges from approximately latitude 33° 37.5' in the south to the 37th parallel in the north, corresponding to a distance of roughly 230 miles (375 kilometers). In longitude the State ranges from approximately 94° 26' in the east to 103° in the west corresponding to a distance of 480 miles (770 kilometers). There are 77 counties in the State and two major metropolitan areas, Tulsa and Oklahoma City.

At present two cartesian coordinate systems are used in Oklahoma on a statewide basis. The first is the Oklahoma State Plane Coordinate System, developed by the Coast and Geodetic Survey of the U.S. Department of Commerce. The second is the Universal Transverse Mercador (UTM) system, a system covering the entire world (with the exception of the polar caps) and developed by the U.S. Army. The U.S. Environmental Protection Agency has adopted the UTM system for its work because of its universality.

Local governments in Oklahoma - particularly in the major cities of Tulsa and Oklahoma City - have adopted coordinate systems independent of statewide systems. These locally used systems have typically been tied to land lines (range-township-section lines). Although this basis is convenient because section lines typically correspond to major streets, it has a major shortcoming in that land lines are not cartesian. Land lines have offsets which compensate for the fact that lines of latitude become shorter with increasing latitude. In addition, section lines are not always spaced at

equal intervals of 1 mile. Hence, although use of land lines as a coordinate system may be convenient for point location, its use is limited computationally.

The Oklahoma State Plane System divides the State into a northern and a southern zone; the exact delineation between the two zones is determined by county boundaries (see Figure 1). The UTM system divides Oklahoma into three zones, UTM zone numbers 13 (western), 14 (central), and 15 (eastern) (see Figure 2). In these two systems, points within one zone can be related to points within another zone only with considerable computational difficulty. Work performed by the State and local air quality control agencies within Oklahoma frequently requires the study of areas which cross zone boundaries. This work is encumbered by the requirement to deal with two or more cartesian grid systems. It is apparent that a need exists for a single statewide cartesian coordinate system. It is for this reason that the current study was funded and the Oklahoma Coordinate System was developed.

Section 2.0 of this report describes the Oklahoma Coordinate System (OCS), including the mathematical specifications of the System. Section 3.0 describes computational procedures for using the system, including formulas for converting between this system and others currently used in Oklahoma. Section 4.0 describes materials produced as part of the implementation of the system, including maps and grid overlays. Section 5.0 describes a procedure for preparing OCS grid lines for printed 7-1/2' and 15' maps prepared by the U.S. Geological Survey. Section 6.0 describes briefly computer programs prepared or used in this study to perform coordinate conversions.

Figure 1. Oklahoma State Plane Coordinate Zones

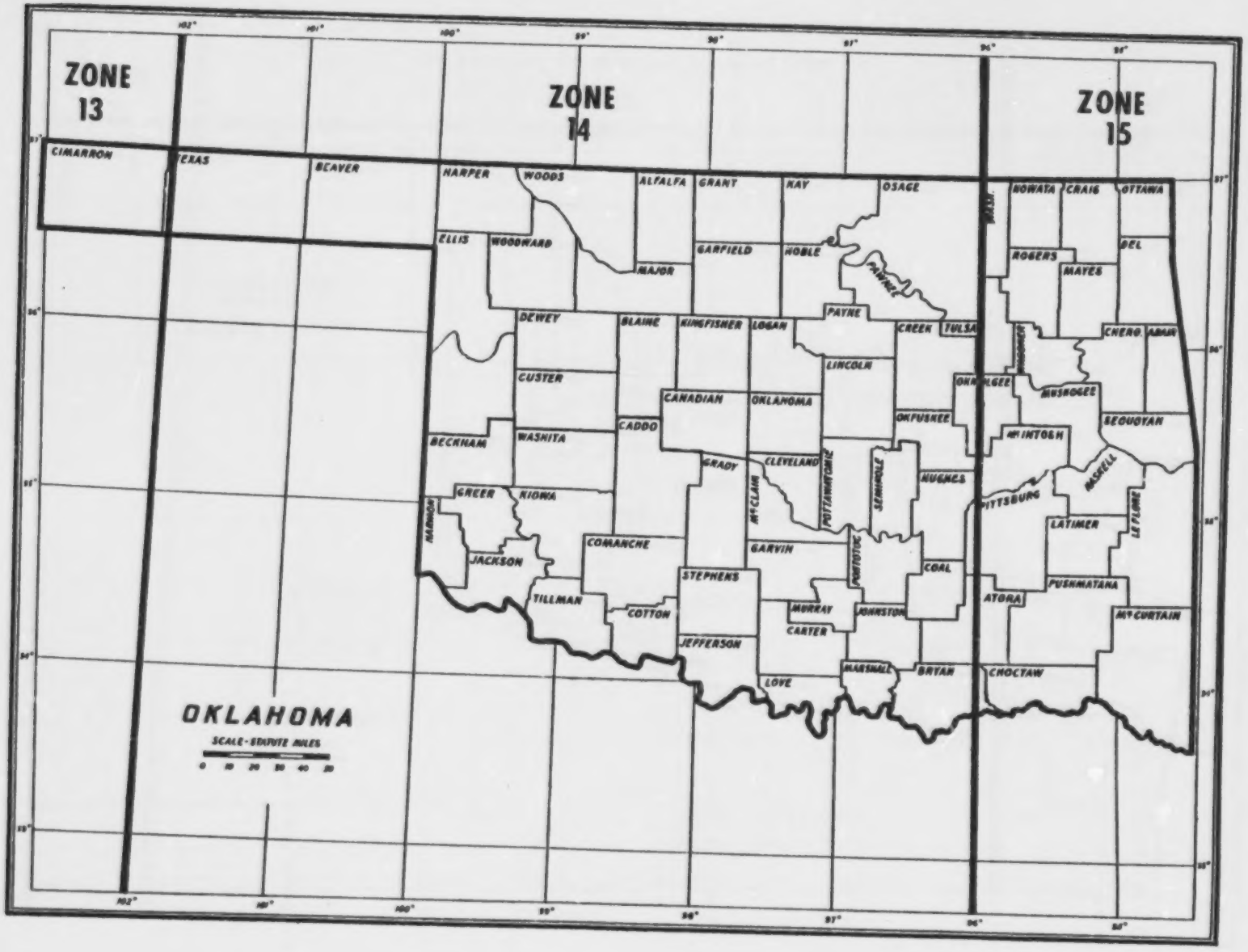

Figure 2. UTM Zones

Section 2.0

THE OKLAHOMA COORDINATE SYSTEM

The Oklahoma Coordinate System is based on a Lambert conformal conic projection of the earth's surface which is normally used to represent states with greater east-west than north-south extent. This projection uses the concept of a cone which intersects the earth along two parallels of latitude (called "standard parallels") and whose axis is the earth's axis of rotation. In the truly perspective projection, features of the earth's surface (including parallels and meridians) are projected from the center of the earth onto this cone. The complete cone or sections of the cone's surface may be developed to a flat surface to form a plane map. However, in the Lambert projection, the spacing of parallels is modified mathematically to give the projection the property of conformality. Conformality means that the shapes of small features on the earth's surface are minimally distorted on the map projection, even though the size may be exaggerated.* Lines of latitude and longitude intersect each other at right angles just as on the earth's surface.

Figure 3 illustrates the Lambert projection used to construct the Oklahoma Coordinate System. This projection is based on standard parallels of 34° 20' and 36° 20' which pass through Oklahoma and are selected to minimize errors in scale introduced by the projection.** The Oklahoma Coordinate System is formed by imposing a cartesian grid on the conic projection. The

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* As an example, note the size of Greenland on a Mercator projection, which is conformal.

** The two-zone State Plane System is based on standard parallels of 33°34' and 35°14' (south zone) and 35°34' and 36°46' (north zone).

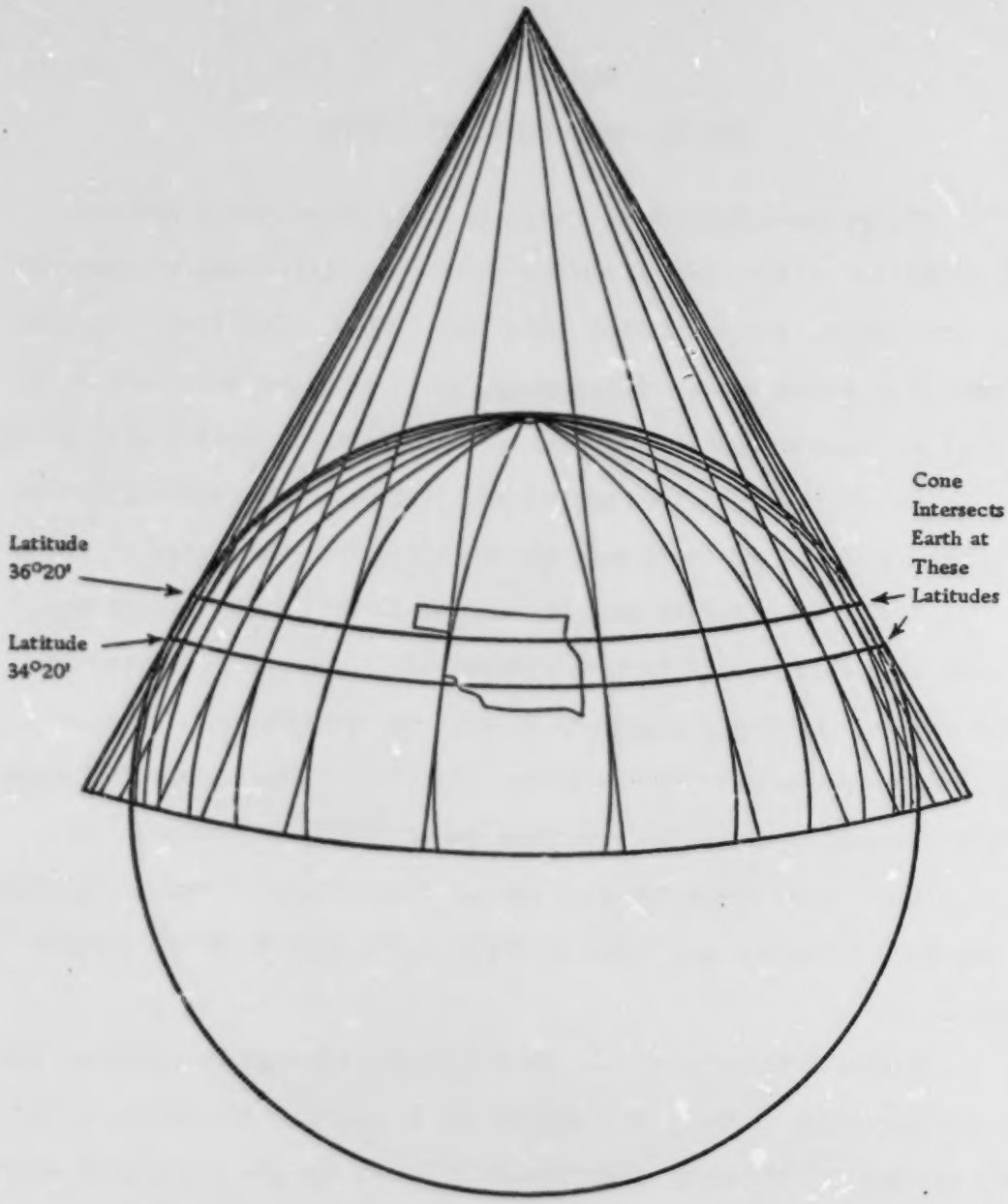

Figure 3. Concept of Lambert Conformal Conic Projection

grid has a Central Meridian of 98° which is central to Oklahoma. Hence, the y-axis of the grid is coincident with the 98th meridian on the projection. As is common practice, the positive y-axis represents north and the positive x-axis represents east. The origin of the system was selected so that all points within Oklahoma have positive OCS coordinates. The basic unit of the system is the meter, in keeping with current national policy aimed at conversion to the metric system.

Figure 4 shows the location of 100-kilometer OCS grid lines with respect to state and county boundaries in Oklahoma. In OCS units, the State ranges approximately from x = 152,000 meters in the west to x = 925,000 meters in the east and from y = 42,000 meters in the south to y = 418,000 meters in the north.

The mathematical constants of the projection and cartesian system used to develop the OCS are given in Appendix A. A summary of features of this system follows:

- Characteristic of the Lambert conformal conic projection, meridians are straight lines and will appear so on maps prepared in this projection.
- However, parallels are arcs of concentric circles, centered on the vertex of the cone of projection. Since the radii of these circles are extremely large (in comparison with the dimensions of Oklahoma), the curvature of parallels within the projection is only perceptible for large-area maps (for example, the entire state of Oklahoma at a scale of 1:500,000 or a USGS UTM map at a scale of 1:250,000).
- The projection is characterized by a very small scale variation within the State of Oklahoma. By design, scale on the projection is exact along the standard parallels (since the projection touches the earth's surface along these parallels). Scale is defined as

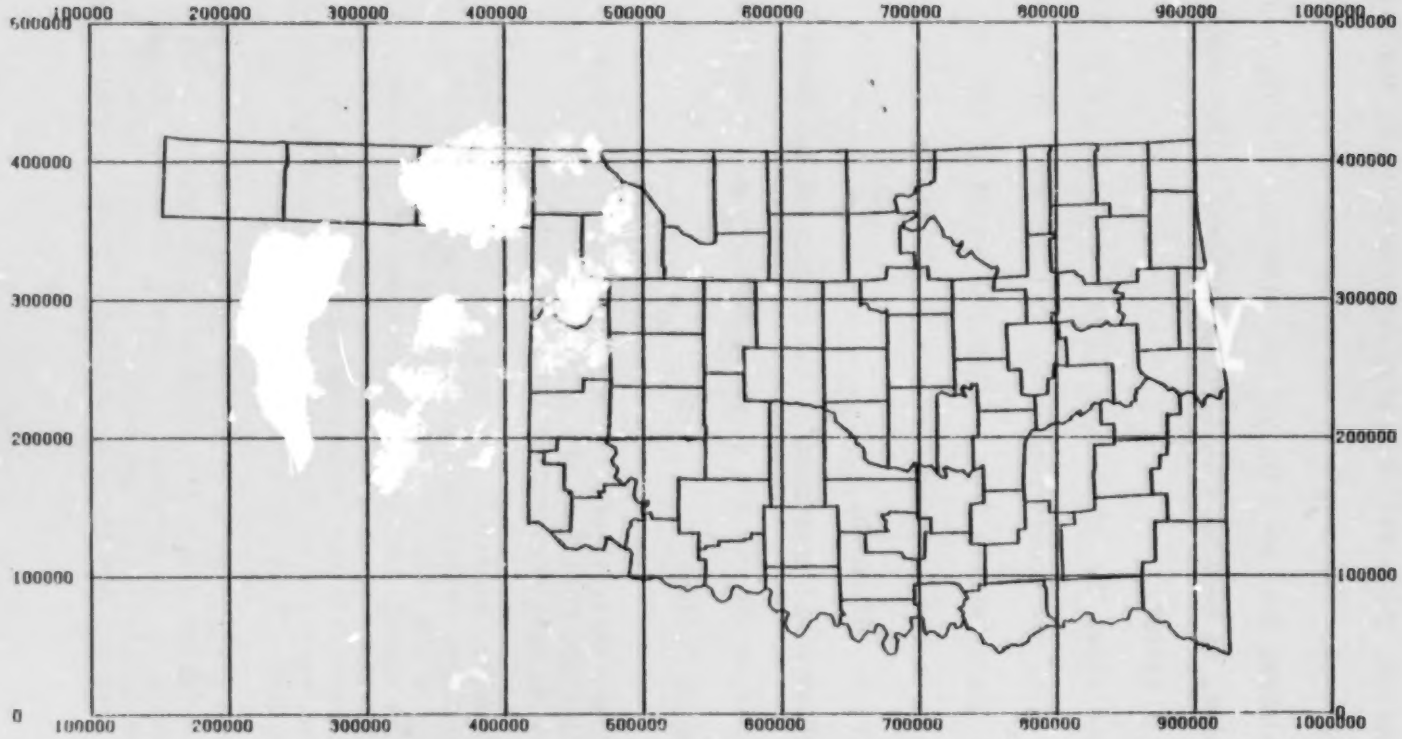

Figure 4. Oklahoma Coordinate System (Unizone) Grids

the ratio of the length of a feature on the projection to the actual length on the earth's surface. Within the standard parallels, projection scale is smaller than true scale. Outside the parallels, the scale is larger than true scale. As a general rule, the greater the distance from a standard parallel, the greater the difference between true scale and projection scale.

Although map or projection scale varies with latitude, it is constant for a given latitude (that is, it does not vary with longitude). The maximum scale error of the projection within Oklahoma is approximately 0.0003. The effect of such a small scale error can be ignored for most applications. However, a procedure for compensating for this scale error is described in Section 3.5 and may be used when highly precise computations of distance are required.

- The projection is also characterized by convergence of meridians. Due to the nature of the projection, all meridians converge at the vertex of the projection cone. The measure of convergence at a particular point is the angle between the meridian at that point and a line drawn through the point and parallel to the central meridian of the projection (98° in the case of the OCS).* In this report we will refer to this angle as "convergence error." The importance of the convergence concept is that the vertical line (indicated by a line of the form x = constant) at a point on the projection does not represent true north. Convergence error is zero along the central meridian and increases with distance from the central meridian. In Oklahoma, convergence error is maximum at the western boundary of the State (bordering New Mexico) and is approximately 2.9° there. This error is quite small and may not require compensation. Convergence error and compensation for it are discussed in Section 3.6.

Tables which relate the OCS to geodetic coordinates are presented in Appendices B-1 and B-2. Table B-1 contains an entry for each minute

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* This line is grid north in the map coordination system.

of latitude from the 33rd to the 38th parallel. Table B-2 contains an entry for each minute of longitude from the 94th to the 104th meridian. The tables include portions of surrounding states. These tables correspond to those in U.S. Department of Commerce Special Publication Number 287 which describe the two-zone State Plane System developed for Oklahoma. Table B-1 contains the following data for each latitude:

- Column 1: the latitude (degrees, minutes)
- Column 2: an R value, used to compute OCS coordinates from geodetic coordinates (see Section 3.1)
- Column 3: a y' value, which is the value of the y coordinate along the central meridian for each minute of latitude
- Column 4: the distance corresponding to 1 second of arc on the projection
- Column 5: the common logarithm of the projection scale expressed in units of the seventh decimal place (that is, multiplied by a factor of 10^7)
- Column 6: the projection scale, as a simple ratio.

Table B-2 contains the convergence angle θ for each minute of longitude.

Section 3.0

COMPUTATIONAL PROCEDURES

This section describes computational procedures required for converting from OCS coordinates to other systems, and vice versa, and for compensating for scale and convergence error. In general, there are several methods of converting from one system to another. Among these are the following:

1. Utilization of relatively simple formulas which rely on tabular data to simplify computations
2. Complete reliance on analytic formulas which relate the geometry of one projection to that of another
3. The use of especially formulated computer programs to carry out conversion, frequently designed according to the formulations of methods (1) and (2)
4. The use of a gridded overlay to locate a point within one coordinate system and read its value in another.

Each of these methods is feasible and may be useful in certain circumstances. However, the procedures presented here are generally of the first type because this method is ideal for computing a limited number of conversions when a simple calculator is available. Computer programs available for conversion are described in Section 5.0 and are listed in Appendix G.

3.1 CONVERSION FROM OCS COORDINATES TO GEODETIC COORDINATES AND VICE VERSA

Tables B-1 and B-2 present constants required to compute OCS coordinates from geodetic coordinates (latitude and longitude) and vice versa. These tables were described previously in Section 2.0.

3.1.1 Conversion from Geodetic Coordinates to OCS Coordinates

The OCS coordinates (x, y) may be evaluated from the geodetic coordinates (ϕ, λ) by use of the formulas:

$$x = C + R \sin \theta \qquad (3.1\text{-}1)$$

$$y = R_b - R \cos \theta$$

where

$$C = 600{,}000 \text{ meters}$$

$$R_b = 9{,}227{,}392.691 \text{ meters}$$

and ϕ, λ are the latitude and longitude, respectively. R may be evaluated by linear interpolation in Table B-1 for the appropriate ϕ value, and θ may be evaluated by linear interpolation in Table B-2 for the appropriate λ value.

For example, let us assume that we wish to know the OCS coordinates for the point whose geodetic coordinates are ϕ = 36° 29' 35" and λ = 101° 22' 14". The following procedure would be followed:

1. From Table B-1, the value R is computed as

   R = 8,877,944.16 + (35"/60")(8,876,094.64 - 8,877,944.16)

   R = 8,876,865.3 meters.

2. From Table B-2, the value of θ is computed as

   θ = -1.94715285 + (14"/60")(-1.95679222 - (-1.94715285))

   θ = -1.9494021°.

3. The coordinates x, y are computed by inserting the values of R, θ into the equations of 3.1-1

$x = 600{,}000 + 8{,}876{,}865.3 \sin(-1.9494021°) = 298{,}036.4$ meters

$y = 9{,}227{,}392.691 - (8{,}876{,}865.3)\cos(-1.9494021°)$

$= 355{,}664.7$ meters.

3.1.2 Conversion from OCS Coordinates to Geodetic Coordinates

The computation of geodetic coordinates ϕ, λ from the OCS coordinates x, y may be accomplished by use of formulas 3.1-2 and 3.1-3:

$$\theta = \text{Arctan}\left[(x-C)/(R_b - y)\right] \qquad (3.1\text{-}2)$$

$$R = (R_b - y)/\cos\theta \qquad (3.1\text{-}3)$$

Equation 3.1-2 is used to solve for θ; this value of θ and the value of y are substituted in Equation 3.1-3 to compute R. The latitude ϕ is evaluated by an inverse table look-up in Table B-1 using the value computed for R. The longitude λ is evaluated by an inverse table look-up in Table B-2 using the value computed for θ. Both inverse table lookups should linearly interpolate to obtain accurate values of ϕ and λ.

For example, let us assume that we wish to compute the geodetic coordinates ϕ, λ corresponding to the OCS coordinates x = 298,036.4 meters and y = 355,664.7 meters. The following procedure is used:

1. Compute θ from x, y, as follows:

$$\theta = \text{Arctan}\left[\frac{298{,}036.4 - 600{,}000}{9{,}227{,}392.691 - 355{,}664.7}\right]$$

$\theta = -1.949402°$.

2. Compute R from y and θ, as follows:

$$R = \frac{9,227,392.691 - 355,664.7}{\cos(-1.949402)}$$

$$R = 8,876,865.4.$$

3. From Table B-1, the latitude is computed, using the above value of R:

$$\phi = 36^\circ\ 29'\ \left[\frac{8,876,865.4 - 8,877,944.2}{8,876,094.6 - 8,877,944.2}\right] 60''$$

$$\phi = 36^\circ\ 29'\ 35''.$$

4. From Table B-2, the longitude is computed, using the computed value of θ:

$$\lambda = 101^\circ\ 22'\ \left[\frac{-1.949402 - (-1.9471528)}{-1.9567922 - (-1.9471528)}\right] 60''$$

$$\lambda = 101^\circ\ 22'\ 14''$$

3.2 CONVERSION FROM OKLAHOMA STATE PLANE COORDINATES TO OCS COORDINATES AND VICE VERSA

Conversion between Oklahoma State Plane Coordinates and OCS coordinates requires two steps: first, a conversion from one system to geodetic coordinates; second, a conversion from geodetic coordinates to the other system. The tables of Appendix C are included to permit conversion from State Plane Coordinates to geodetic coordinates and vice versa.

3.2.1 Conversion from Oklahoma State Plane Coordinates to OCS Coordinates

To convert from State Plane Coordinates to geodetic coordinates, first compute geodetic coordinates using Equations 3.1-2 and 3.1-3 (which are general for the Lambert projection and apply to the State Plane System

as well as the OCS). For the State Plane System, the value of R_b is 29,082,831.7 ft for the North Zone and 30,838,032.96 ft for the South Zone; C = 2,000,000 ft for both zones. Convert from the computed geodetic coordinates to OCS coordinates.

For example, let us assume that we wish to compute the OCS coordinates for a point located in the South Zone of the State Plane System, with coordinates x = 1,986,422 ft and y = 710,590 ft. The following procedure is used:

1. From Equation 3.1-2 and the values of x, y, compute :

$$\theta = \text{Arctan}\left[\frac{1,986,422 - 2,000,000}{30,838,033 - 710,590}\right] = -0.0258224°.$$

2. From Equation 3.1-3, compute the value of R:

$$R = \frac{30,838,032.96 - 710,590}{\cos(-0.0258224)} = 30,127,446 \text{ ft}$$

3. Using the above value of R and Table C-3, compute the latitude :

$$\phi = 35° 17' \left[\frac{30,127,446 - 30,128,381}{30,122,314 - 30,128,381}\right] 60"$$

$$\phi = 35° 17' 9.2".$$

4. Using the value of θ computed in step (1) and Table C-4, compute the longitude λ. First convert to degrees, minutes and seconds corresponding to Table C-4.

$$\theta = -1' 32.96"$$

$$\lambda = 98° 02' \left[\frac{32.96 - 8.1140}{42.1710 - 8.1140}\right] 60"$$

$$\lambda = 98° 02' 43.8".$$

5. Now, using the procedure described in Section 3.1, compute the OCS coordinates from the geodetic coordinates:

From the latitude ϕ = 35° 17' 9.2", compute R from Table B-1:

R = 9,011,077.3 + (9.2"/60")(9,009,228.5 - 9,011,077.3)

R = 9,010,793.8 meters

From the longitude λ = 98° 02' 43.8" compute θ from Table B-2:

θ = - 0.01927874 + (43.8"/60")(- 0.02891811 -(-0.01927874))

θ = - 0.02631548°

Now, the OCS coordinates may be computed:

x = 600,000 + 9,010,793.8 sin (-0.02631548°) = 595,861.4 meters

y = 9,227,392.691 - 9,010,793.8 cos (-0.02631548°)

y = 216,599.8 meters

3.2.2 Conversion from OCS Coordinates to Oklahoma State Plane Coordinates

To convert from OCS coordinates to Oklahoma State Plane coordinates:

1. Compute geodetic coordinates from OCS coordinates using the procedure described in Section 3.1.

2. From the geodetic coordinates and reference to Figure 1, determine in which State Plane zone the point is located.

3. Now, using Equation 3.1-1, the appropriate tables from Appendix C and the appropriate constants C and R_b, compute the State Plane Coordinates corresponding to the geodetic coordinates ϕ, λ.

   For the South Zone,

   $$C = 2{,}000{,}000 \text{ ft}$$

   $$R_b = 30{,}838{,}032.96 \text{ ft}$$

   and Tables C-3 and C-4 are used.

For the North Zone,

$$C = 2{,}000{,}000 \text{ ft}$$

$$R_b = 29{,}082{,}831.70 \text{ ft}$$

and Tables C-1 and C-2 are used.

For example, let us assume that we wish to compute the State Plane Coordinates corresponding to OCS coordinates x = 595,861.4 meters and y = 216,599.8 meters. The following procedure is used:

1. Using Equation 3.1-2 and 3.1-3 and reference to Tables B-1 and B-2, the geodetic coordinates are computed.

$$\theta = \text{Arctan} \left[\frac{595{,}861.4 - 600{,}000}{9{,}227{,}392.691 - 216{,}608.9}\right] = -0.02631561°$$

$$R = \frac{9{,}227{,}392.691 - 216{,}599.8}{\cos(-0.02631561°)}$$

$$R = 9{,}010{,}793.8 \text{ meters}$$

$$\phi = 35° 17' \left[\frac{9{,}010{,}793.8 - 9{,}011{,}077.3}{9{,}009{,}228.5 - 9{,}011{,}077.3}\right] 60"$$

$$\phi = 35° 17' 9.2"$$

$$\lambda = 98° 2' \left[\frac{-0.02631561 - (-0.01927874)}{-0.02891811 - (-0.01927874)}\right] 60"$$

$$\lambda = 98° 2' 43.8"$$

2. Reference to Figure 1 indicates that this point is located in the South Zone of the State Plane System.

3. Compute State Plane coordinates for the South Zone, using Equations 3.1-1, Tables C-3 and C-4, and the computed latitude and longitude.

$R = 30,128,380.65 + (9.2"/60")(30,122,314.15 - 30,128,380.65)$

$R = 30,127,450$ ft

$\theta = -1' 8.1140" + (42.171 - 8.114)(43.8/60.0)"$

$\theta = -1' 32.9716"$

$\theta = -0.02582656°$

$x = 2,000,000 + 30,127,450 \sin(-0.02582656") = 1,986,420$ ft

$y = 30,838,032.96 - 30,127,450 \cos(-0.02582656°) = 710,586$ ft.

Reference to these State Plane Coordinates should be accompanied by specification of the South Zone.

3.3 CONVERSION FROM UTM TO OCS COORDINATES AND VICE VERSA

Table D of Appendix D presents constants which permit straightforward conversion from UTM to OCS coordinates and vice versa. These tables are based on the concept that, for small regions, OCS and UTM coordinates may be assumed to be linearly related. The OCS coordinates x and y are related to the UTM coordinates E and N (in meters) by the equations:

$$x = (O)E - (P)N + (Q) \qquad (3.3\text{-}1)$$
$$y = (P)E + (O)N + (R)$$

Similarly, the UTM coordinates E and N may be related to the OCS coordinates x and y by the equations:

$$E = (S)x - (T)y + (U) \qquad (3.3\text{-}2)$$
$$N = (T)x + (S)y + (V)$$

Table D presents the constants O through V required for the above conversion equations. UTM zone numbers are also included in these tables. Each of these tables also includes estimates of maximum errors introduced by the conversion procedure. Maximum error due to the above approximations is 20 meters, although for most cases error will not exceed a few meters.

Table D of Appendix D contains an entry for each 15' x 15' quadrant in Oklahoma and immediately adjacent areas. The latitude and longitude presented refer to the northwest corner of the quadrant. Hence, if one wishes to convert a point located between longitudes 95° 45' and 96° 0' and latitudes 36° 0' and he should use the table entry with longitude 96° and latitude 36° 15'. The use of an incorrect table entry implies greater error in the conversion of coordinates than indicated in Table D. The error increases with greater distance of the point from the correct quadrant.

The table contains a separate page for each longitude, with latitude decreasing down the page (that is, progressing from north to south). To locate the appropriate table entry, the user must know the approximate geodetic coordinates ϕ, λ. These can be obtained by reference to an appropriate map. If the point is located near one of the two UTM zone lines crossing Oklahoma, the user must know precisely on which side of the zone line the point lies, in order to assign the correct UTM Zone Number.

As an example, let us assume that a user in the Tulsa area wishes to compute the OCS coordinates x, y of a point whose UTM coordinates are E = 768,000 meters, N = 4,003,200 meters, and zone = 14. Reference to a regional area map indicates that this point is located approximately at latitude ϕ = 36° and longitude λ = 96°. Since the point is located in

UTM Zone 14, the user knows that the actual longitude is greater than 96°. Also, his reference to a map indicates that the point is slightly north of latitude 36°. He concludes that the point is located in the quadrant bounded by latitudes 36° and 36° 15' and longitudes 96° and 96° 15'. Hence, he obtains the constants [O], [P], [Q], and [R] from the line identified as longitude 96° 15' and latitude 36° 15'. The conversion equations become:

$$x = (0.9994249)\ 768{,}000 - (-0.0106788)\ 4{,}003{,}200 + (-32{,}266.6)$$

$$y = (-0.0106788)\ 768{,}000 + (0.9994249)\ 4{,}003{,}200 + (-3{,}679{,}752.3)$$

$$x = 778{,}041.1 \text{ meters}$$

$$y = 312{,}944.1 \text{ meters}$$

Let us assume that the user wishes to compute the UTM coordinates corresponding to a point with OCS coordinates x = 778,041.1 meters, and y = 312,944.1 meters. As described in the previous paragraph, he determines that the point is located in the quadrant bounded by latitudes 36° and 36° 15' and longitudes 96° and 96° 15'.* Hence the conversion equations become:

$$E = (1.0004624)\ 778{,}041.1 - (0.0106894)\ 312{,}944.1 + (-7{,}055.6)$$

$$N = (0.0106894)\ 778{,}041.1 + (1.0004624)\ 312{,}944.1 + (3{,}681{,}794.0)$$

$$E = 768{,}000 \text{ meters}$$

$$N = 4{,}003{,}200 \text{ meters}$$

From Table D (top of page) the user also determines that this point is located in UTM Zone 14.

---

* He must determine that the point is west of longitude 96°, which separates UTM Zones 14 and 15, by closer inspection of his reference map.

3.4 CONVERSION FROM LOCAL TO OCS COORDINATES

By far the most commonly used reference system in Oklahoma is the Bureau of Land Management Land Lines. These lines, which divide land into ranges, townships, and sections, are used to describe property for the purpose of identifying ownership. Within Oklahoma, section lines frequently coincide with major urban and county roads. These land lines are also coded on most USGS maps (including range and township lines on state-base maps). However, the use of land lines as a coordinate system is not practical, except for small areas, due to offsets and surveying errors which are inherently part of the system.

Local coordinate systems are frequently cartesian extensions of land lines. Commonly north-south and east-west land lines which are central to the region to be covered are selected as the axes of the coordinate system. Units are typically miles. Within the Oklahoma City area, range 12N and township 03W are a suitable basis for a local coordinate system. Within the Tulsa area, range 19N and township 13E are a suitable basis for a local coordinate system. If these land lines are taker as axes, and units are expressed in miles, conversion equations become

$$\begin{aligned} x &= x_0 + u \cdot W - v \cdot X \\ y &= y_0 + u \cdot X + v \cdot W \end{aligned} \qquad (3.4\text{-}1)$$

where (x, y) are OCS coordinates and (u, v) are local coordinates. Conversely,

$$\begin{aligned} u &= u_0 + x \cdot Y - y \cdot Z \\ v &= v_0 + x \cdot Z + y \cdot Y \end{aligned} \qquad (3.4\text{-}2)$$

The constants x_o, y_o, W, X, u_o, v_o, Y, and Z are given in Table E-1 of Appendix E for the Tulsa area and in Table E-2 for the Oklahoma City area.

For example, let us assume that a point in the Oklahoma City area has the local coordinates

$$u = 1.0 \text{ miles}$$

$$v = 1.0 \text{ miles}$$

(Note that this point is located at the northeast corner of Section 31 of Range 12E, Township 3W.) From Equations 3.4-1 and Table E-2, we have,

$$x = 639,450 + (1.0)(1609.341) - (1.0)(2.9925)$$
$$= 641,056.35 \text{ meters}$$

$$y = 236,495 + (1.0)(2.9925) + (1.0)(1609.341)$$
$$= 238,107.33 \text{ meters}$$

Now let us find the local coordinates of the point whose OCS coordinates are

$$x = 641,056.35 \text{ meters}$$

$$y = 238,107.33 \text{ meters} .$$

From Equations 3.4-2, and Table E-2 we have

$$u = -397.061 + (641,056.35)(.00062137) - (238,107.33)(.00000116)$$
$$= 1.0 \text{ miles}$$

$$v = -147.693 + (641,056.35)(.00000116) + (238,107.33)(.00062137)$$
$$= 1.0 \text{ miles}$$

3.5 COMPENSATION FOR SCALE ERROR

Scale error resulting from the Lambert projection used for the Oklahoma Coordinate System is very small and probably will not require correction for the majority of applications. Normally scale correction is required only for precise surveying applications.

To give an example of the impact of scale error on air quality computations, let us consider a source point located at a distance of 10 kilometers from a receptor point. If OCS coordinates are used to denote the locations of these two points, the maximum error in distance which will result (as long as the two points are both located within Oklahoma) is 0.0003 x 10 kilometers = 0.003 kilometers. This error is far less than typical errors in location of receptor or source points and its impact on computations is negligible.

However, if it is determined that highly precise computations of distance are required for an application, the user should proceed as follows:

1. Compute an average scale factor K_{ave} for the points (x_1, y_1) and (x_2, y_2) between which distance is to be computed.

$$K_{ave} = (K_1 + K_2 + 3K_3)/5$$

where

K_1 is the scale factor at point 1

K_2 is the scale factor at point 2

and K_3 is the scale factor at a point midway between 1 and 2.

The coordinates of point 3 are given by

$$x_3 = (x_1 + x_2)/2$$

$$y_3 = (y_1 + y_2)/2$$

2. The individual scale factors may be obtained from Table B-1, by one of two methods:

   (a) If an approximate scale correction will suffice, find the y' corresponding to the y coordinate of the point and use the corresponding scale factor (K).

   (b) If greater precision is required, the latitude ϕ must be computed corresponding to (x, y) by use of the procedure outlined in Section 3.1 for converting from OCS coordinates to geodetic coordinates. The exact scale factor corresponding to ϕ may then be computed using Table B-1.

3. The corrected distance is given by

$$D' = D/K_{ave}$$

where D is measured from a map or computed from the coordinates of points 1 and 2 using the Pythagorean Theorem.

3.6 COMPENSATION FOR CONVERGENCE ERROR

Convergence error is an angular measure indicating the deviation of the grid north in the OCS coordinate system from true north. The maximum convergence error within Oklahoma occurs at the western tip of the panhandle where it is -2.9°. Convergence error is zero along the 98th meridian. It is approximately 1.2° at Tulsa and 0.29° at Oklahoma City.

Since air pollution models normally assume that grid north within the coordinate system used represents true north, convergence error implies

an error in computation of air quality measures. This results from the fact that wind direction is normally expressed with reference to due north. The simplest method of compensating for convergence error is to subtract the convergence angle from the wind direction. For example, if an air quality computation is to be computed for Tulsa corresponding to a wind direction of 180° (i.e., wind from due south), an adjusted angle of 178.8° should be used (corresponding to a convergence angle of 1.2°). However, for most air quality applications, it is unlikely that a correction of 2.9° or less will have a significant impact on computations.

Section 4.0

GUIDELINES FOR USE OF MAPS AND OVERLAYS

Materials provided as part of the study include the following:

1. A regional state-base map at a scale of approximately 1:300,000, including Oklahoma and immediately adjacent areas of Kansas, Missouri, Arkansas, Texas, and New Mexico. This map is a composite of USGS state-base maps for Oklahoma and the surrounding states and has OCS grid lines superimposed.

2. A series of 10 regional area maps drawn from the map described in (1) and at the same scale (approximately 1:300,000).

3. OCS gridded overlays corresponding to USGS printed 7-1/2' and 15' quad maps for Oklahoma City, Tulsa, Muskogee, Bartlesville, Ponca City, Enid, and Lawton.

4. OCS gridded overlays for UTM maps at scales of 1:250,000 covering Oklahoma.

5. OCS gridded overlays for local maps used by air quality control agencies in Oklahoma City and Tulsa.

6. Map reading scales, permitting the reading of point locations within OCS grid lines.

The following sections give recommendations for the use of these materials and discuss problems which may be encountered.

4.1 REGIONAL STATE BASE AND REGIONAL AREA MAPS

These maps were constructed by compositing state-base maps for Oklahoma and surrounding states and superimposing OCS grid lines at intervals of 10 kilometers. These maps were reproduced using black and white photography. As a result, it was necessary to exclude some detail found in printed USGS state-base maps, where color separation allows the inclusion

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of more detail (including, for example, contour lines). Features included are:

1. Major lines of latitude and longitude, state and county boundaries, border and neat lines
2. Drainage (streams, rivers, lakes)
3. Drainage lettering
4. Land lines (range and township lines)
5. Railroad and locality circles
6. Culture lettering (town and city names)
7. Reservation boundaries
8. Reservation lettering
9. Highways
10. Highway markers.

The regional state base and regional area maps offer two advantages over the printed USGS state base for Oklahoma: first, immediately adjacent areas of neighboring states are included; second, OCS grid lines are included on the maps, giving a direct link with the new coordinate system. Disadvantages are primarily two-fold: first, some of the detail of the printed map is lost; second, the printed USGS map is periodically updated by the USGS. It is intended that the regional state base map and regional area maps not replace printed USGS state base maps, but simply augment them.

Only a rough determination of point coordinates can be obtained from maps at a scale of 1:300,000, regardless of the map. For example, if it is assumed that the error in reading point coordinates is only 0.02 inches, the corresponding distance on the earth's surface is 0.15 kilometers. This error is greater than the accuracy requirements of location of point sources in the National Emissions Data System (NEDS). Point coordinates should be determined by using large-scale maps (such as 7-1/2 quad maps, which are at a scale of 1:24,000). At a scale of 1:24,000, an error of 0.02 inches corresponds to only 0.01 kilometers on the earth's surface.

4.2 USE OF GRIDDED OVERLAYS WITH PRINTED USGS MAPS

OCS gridded overlays have been produced corresponding to USGS 7-1/2', 15', and UTM maps at scales of 1:24,000, 1:62,500, and 1:250,000, respectively.* Each of these maps corresponds to an area bounded by lines of latitude on the north and south and lines of longitude on the east and west. The angular dimensions of the maps are 7-1/2' by 7-1/2', 15' by 15', and 1° by 2°, respectively.** The gridded overlays are also bounded by the lines of latitude and longitude which bound the corresponding map. Hence, registration can be accomplished easily by lining up the borders of the overlay with the map borders.***

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* In addition, a regular grid overlay at a scale of 1:24,000, giving grid lines at intervals of 1000 meters, is provided. Section 5.0 discusses the use of this regular grid overlay with 7-1/2' maps.

** A few quad maps, which are normally 7-1/2' by 7-1/2', are larger in dimension. These maps are bounded by lines of latitude and/or lines of longitude which are not multiples of 7-1/2'. Examples are Sapulpa South 1958-(67PR), Bixby 1957-(67PR), and Leonard 1957-(67PR). These maps are all in the Tulsa area and were apparently extended to include portions of Tulsa County.

*** In the cases of abnormal map boundaries, discussed in the above footnote, registration may be accomplished by aligning grid overlay bounding lines with corresponding lines of latitude and longitude, which are included on the quad maps.

The gridded overlays have been plotted on mylar film, a dimensionally stable material. As a result, these overlays maintain their designed scale characteristics. However, maps which are printed on paper suffer from a lack of dimensional stability. They may change significantly in size in one or more directions, with changing atmospheric conditions and prolonged use. As a result, gridded overlays frequently will not register perfectly with USGS maps.* A registration difference of approximately 0.02 inches can be expected with 7-1/2' quad maps, which are approximately 19 inches by 23 inches in dimension within Oklahoma. However, this error corresponds to only 0.01 kilometers on the earth's surface and can be ignored for many applications. Registration error may be expected to be more significant with UTM maps which are at a smaller scale (1:250,000) and are larger in dimension (approximately 30 inches in length). A registration error of 0.02 inches, if not compensated for, may imply an error as large as 0.13 kilometers on the earth's surface.

The user may compensate for registration error in determining point coordinates. Let us assume that the objective is to read the x coordinate of a point on the map, but it is observed that the eastern and western borders of the overlay do not coincide precisely with those of the map. If the point is near the western or eastern border of the map, the user should line up the appropriate borders of the map and the overlay and then read the x coordinate. If the point is near the center, center the overlay and the map before reading the point location.

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* In some cases considerable errors are present in printed USGS maps. In particular, the UTM map corresponding to Fort Smith, Arkansas, and including much of Oklahoma, appears to have considerable distortion in it. Generally, UTM maps do not appear to be as reliable as 7-1/2' and 15' quad maps.

For points which are not clearly near the map's center or border, the user may compensate for registration error by making duplicate readings of the x coordinate. One reading should be taken with the western borders of the map and the overlay aligned, the other with the eastern borders aligned. The correct x coordinate is given by the weighted average of the readings, as indicated by equation

$$x = x_1 d_2/L + x_2 d_1/L \qquad (4.0\text{-}1)$$

where

x_1, x_2 = the two readings

L = the horizontal dimension of the map

d_1 and d_2 = the approximate distances to the aligned border.

The ratios d_i/L give greater weight to the measure with the smaller d_i. Since the ratios represent weights, their sum must equal 1.0. This can be assured by computing L as the sum of d_1 and d_2.

The above describes a procedure for compensation for east-west registration error when determining the x coordinate of a point. The procedure is equally applicable to the determination of the y coordinate of a point when a north-south registration error is observed.

Section 5.0

PREPARATION OF OCS GRID LINES

This section describes how grids may be provided for any 7-1/2' or 15' quad map for Oklahoma and adjacent areas of neighboring states. Section 5.1 gives detailed instructions which permit the user to construct highly precise grids, compensating for scale errors in printed maps. Section 5.2 describes a more convenient but less precise procedure, using a general grid overlay for 7-1/2' quad maps.

5.1 CONSTRUCTION OF PRECISE GRID LINES

Tables F-1 and F-2 of Appendix F have been prepared to permit the construction of OCS grid lines for all USGS 7-1/2' and 15' quad maps for Oklahoma at scales of 1:24,000 and 1:62,500 respectively. Table F-1 corresponds to the 7-1/2' maps prepared by the USGS for Oklahoma and immediately adjacent areas. Table F-2 corresponds to the 15' maps for Oklahoma and immediately adjacent areas. These maps may be identified by reference to the map entitled "Index to Topographic Maps of Oklahoma," available from the USGS. Although most of Oklahoma's land area is covered either by 7-1/2' or 15' quad maps, most areas are not covered by both. As a result, many of the lines of Tables F-1 and F-2 correspond to areas which have not been mapped as of this writing.* However, they have been included because the USGS periodically updates its inventory of maps and may prepare maps for areas currently not covered.

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* With the exception of maps outside of Oklahoma, all lines of Tables F-1 and F-2 with "-----" in the name field correspond to areas not mapped at the specified scale.

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The Tables in Appendix F provide data which permit the user to prepare highly precise OCS grid lines either directly on a printed map or on a transparent overlay. Each of the 14 columns of the tables is identified by a letter from "A" through "N," corresponding to the following item descriptions:

(A) The Maps's Name. The name (and the map's scale) and state uniquely identify each map. As explained above, areas not mapped at a particular scale have '-----' entered in the name field.

(B, C) The latitue and longitude of the Southwest corner of the map. Note that items B and C are sufficient to identify a particular map. Appendix F tables are sequenced by longitude and latitude. Hence, location of grid construction data for a particular map is much easier using the map's latitude and longitude, rather than its name.

(D) The value of the first vertical OCS grid line from the western border of the map. This is the westernmost 1000 meter grid north line which intersects the map area.

(E, F) The displacements, in inches, from the southwestern and northwestern corners of the map to the first vertical grid line (D).

(G) The value of the first horizontal OCS grid line. This is the southernmost east-west 1000 meter grid line which intersets the map area.

(H, I) The displacements, in inches, from the southwestern and southeastern corners of the map to the first horizontal grid line (G).

(J) The actual distance (in meters) between adjacent OCS lines (appears at top of table, in line 4 of titling information).

(K) The distance (in inches) between adjacent OCS grid lines on the map.

(L) The vertical dimension of the map in inches (along either the western or eastern border of the map).

(M) The northern (top) dimension of the map (in inches).

(N) The southern (bottom) dimension of the map (in inches).

Figure 5 illustrates how items D through K may be used to construct grid lines for a particular map.

1. Construction of First Vertical Grid Line. The first vertical grid is measured from the western map border by offsets (E) and (F). The user should measure a distance (E) from the southwestern corner of the map along the southern map border and place a tick mark. Similarly, he should measure distance (F) from the northwestern corner of the map, along the northern map border and place a tick mark. These two tick marks are joined by a straight line to form the first vertical grid line. The value of this first vertical grid line, in OCS units, is given by item (D). Occasionally, one of the displacements (E or F) will be negative. This is an indication that the first vertical grid line intersects the western map border. Construction of the grid line is as described previously, except that the tick mark for the negative displacement is measured away from the map area (i.e., to the west). The two tick marks are connected by a straight line, but only that portion of the straight line occurring over the map area need be drawn (see Figure 5, for example).

2. Construction of Additional Vertical Grid Lines. Construction of other vertical grid lines may be accomplished by drawing lines parallel to the first vertical grid line at intervals of (K) inches. The values of the additional vertical grid lines, in OCS units, are (D)+(J), (D)+2(J), D+3(J), etc., from west to east.

3. Construction of the First Horizontal Grid Line. The construction of the first horizontal grid line is similar to that of the first vertical grid line, except that the displacements (H) and (I) are measured from the southwestern and southeastern corners of the map, respectively. The OCS value of the first horizontal grid line is (G).

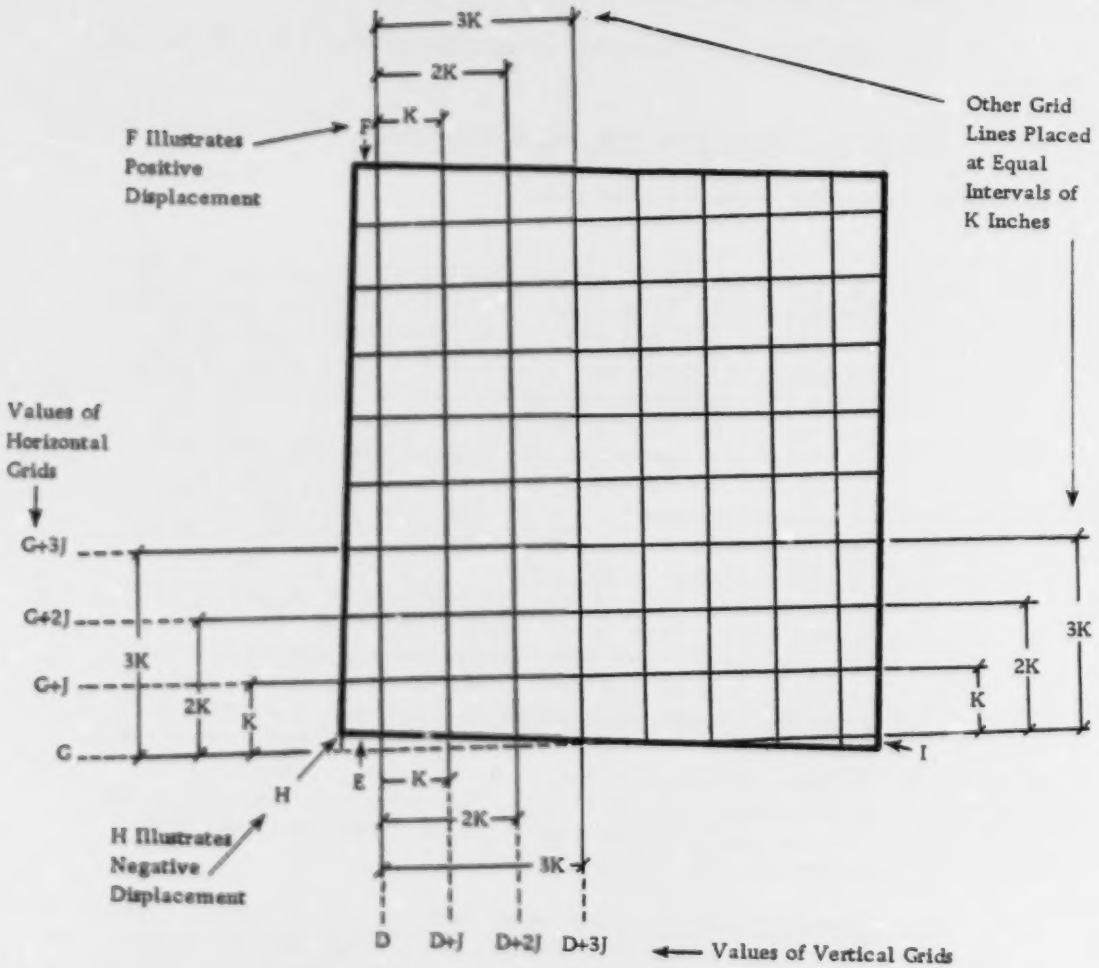

Figure 5. Construction of OCS Grid Lines

4. Construction of Additional Horizontal Grid Lines. The additional horizontal grid lines are constructed from the first horizontal grid line by drawing lines parallel to this first horizontal grid line at intervals of (K) inches. The OCS values of these lines are (G)+(J), (G)+2(J), (G)+3(J), etc., from south to north.

To minimize error in the construction of these additional grid lines, offsets corresponding to the additional lines should be measured from the first grid line, and not from the adjacent grid line. In this way, small errors in location of individual grid lines are not accumulated to become larger errors.

The map dimension data (items L, M, and N) are not necessarily required for the construction of grid lines. These data are included for one of two possible reasons:

1. First, printed maps are reproduced on dimensionally unstable material. Paper changes its dimensions somewhat with changing temperature, humidity, and prolonged use and may change the map scale slightly in one or both dimensions.

2. Second, the user may wish to construct OCS grid lines for a reproduction of a USGS map at other than standard scales.

In either case, the user may determine if compensation for change of scale is required by measuring the actual map dimensions corresponding to the computed measures (L), (M), and (N). If any of the measured values differs significantly from the tabular value, the user should do the following before constructing grid lines:

1. If the measured vertical dimension of the map is L' and differs significantly from the tabular value L, he should compute the ratio L'/L and multiply (H), (I) and (K) by this ratio before constructing the horizontal grid lines.

2. If the measured horizontal dimensions of the map are M' and N' and differ significantly from the tabular values M and N, the user should compute the ratio average (M'/M + N'/N)/2. He should multiply (E), (F), and (K) by this ratio before constructing vertical grid lines.*

It is possible that one and not both of the above adjustments may be required since paper may change in dimension significantly in one direction but not in the other.

5.2 USE OF GENERAL GRID OVERLAY

A convenient alternative to constructing grid lines for each 7-1/2' quad map is the use of a general grid overlay, provided at a scale of 1:24,000, with grid lines at intervals of 1,000 meters. This grid is registered with a quad map by alligning a horizontal grid line with tick marks at (H) and (I) (see Figure 5) and by alligning a vertical grid line with tick marks at (E) and (F) (see Figure 5), while holding the horizontal allignment in place. Instructions for marking tick marks at (H), (I), (E) and (F) are given in the previous section. The value of the first vertical grid line is given by [D] of Table F-1 of Appendix F, while the value of the first horizontal grid line is given by [G] of Table F-1. The values of other grid lines are given by incrementing vertical lines by 1000 from west to east, and incrementing horizontal lines by 1000 from south to north.

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* In the case of compensation for dimensional instability, an assumption is made that either the north-south or the east-west direction of the map coincides with the grain of the paper and that scale error in each dimension is constant. The user can verify this assumption by comparing the ratios M'/M and N'/N. They should be roughly equal.

Section 6.0

USE OF COMPUTER CONVERSION PROGRAMS

Several computer programs were developed or used during this study to convert points from one coordinate system to another. These programs are listed in Appendix D and are described briefly below. All of these programs were written in standard FORTRAN-IV, Level G. All have been implemented on an IBM 370 computer system but can be modified for implementation on other comparable computer systems.

6.1 PROGRAM LAMGEN

Program LAMGEN is used to generate the tables of Appendix B and data files required for conversion from OCS to geodetic coordinates and vice versa.

6.2 SUBPROGRAM LOAD

Subprogram LOAD brings constants generated by LAMGEN and required for conversion of OCS coordinates into computer memory.

6.3 SUBPROGRAM SP3436

Subprogram SP3436 evaluates OCS coordinates from geodetic coordinates (latitude, longitude). Subprogram LOAD must be called to bring R and THETA tables into computer memory before this subprogram is called.

6.4 SUBPROGRAM GC3436

Subprogram GC3436 computes geodetic coordinates (latitude, longitude) and OCS coordinates. Subprogram LOAD must be called to bring R and THETA tables into computer memory before this subprogram is called.

6.5 SUBPROGRAM LOADTM

Subprogram LOADTM loads into computer memory constants required for converting from geodetic coordinates to UTM coordinates, and vice versa. It was supplied by the U.S. Geological Survey.

6.6 SUBPROGRAM UTMGC

Subprogram UTMGC computes UTM coordinates from geodetic coordinates (latitude, longitude). Subprogram LOADTM must be called to bring required constants into computer memory before calling UTMGC. It was supplied by the U.S. Geological Survey.

6.7 SUBPROGRAM GCUTM

Subprogram GCUTM computes geodetic coordinates (latitude, longitude) from UTM coordinates. Subprogram LOADTM must be called to bring required constants into computer memory before calling GCUTM. It was supplied by the U.S. Geological Survey.

6.8 SUBROUTINE OCSUTM

Subroutine OCSUTM computes OCS coordinates from UTM coordinates and UTM zone number. OCSUTM requires that both LOAD and LOADTM have been called to bring required constants and tables into computer memory.

6.9 AUXILIARY SUBPROGRAMS

The auxiliary subprograms BSER, THETA1, and RF1 are required by the conversion programs SP3436 and GC3436. BSER performs a binary search on the R or THETA table to determine the latitude corresponding

to a specified R or the longitude corresponding to a specified THETA. THETA1 computes THETA for a specified longitude. RF1 computes R for a specified latitude.

GLOSSARY

conformality - a property of map projections indicating that the shapes of small features of the earth's surface are preserved on the projection.

convergence error - a property of map projections, indicating the deviation between grid north in a map coordinate system and true north. Convergence error is an angular measure.

dimensional stability - a property of materials, such as paper and film, to maintain constant dimensions of features printed or scribed on them, with changing conditions.

geodetic coordinates - latitude and longitude, used to locate a point on the earth's surface.

grid construction table - a table containing constants used to construct grid lines corresponding to a particular coordinate system and a particular map.

grid line - a line which represents constant values of a coordinate.

gridded overlay - a transparent material on which grid lines corresponding to a coordinate system have been scribed or printed.

Lambert conformal conic projection - a mathematically derived projection of the earth's surface: such that (1) two parallels are projected at their true scale (called "standard" parallels) and (2) the spacing of parallels is adjusted to provide the property of conformality.

land line - real or imaginary lines dividing some portions of the earth's surface into approximately six by six mile squares called townships and one-mile square areas within townships called "sections."

map scale - a number expressed as "1:n," where n represents the average factor by which features on the earth's surface have been reduced for the map representation. Hence, the approximate length of a feature can be calculated as the length of the feature measured on the map multiplied by n.

meridian - a line of constant longitude on the earth's surface; also called a "line of longitude."

mylar film - translucent film having the property of dimensional stability.

OCS - the Oklahoma Coordinate System.

Oklahoma Coordinate System - a cartesian coordinate system covering the State of Oklahoma and based on a Lambert conformal conic projection of the earth's surface with standard parallels of 34°20' and 36°20'.

Oklahoma State Plane System - a two-zone cartesian coordinate system covering the State of Oklahoma and based on Lambert conformal conic projections of the earth's surface. The North Zone of this sytem is based on standard parallels of 35° 34' and 36° 46'; the South Zone is based on standard parallels of 33° 56' and 34° 14'.

parallel - a line of constant latitude on the earth's surface, also called a "line of latitude."

plane cartesian coordinate system - a system used to define the location of a point in a plane, based on the intersection of two infinite and perpendicular straight lines called "axes." A point's location is determined by the values of two "coordinates," which are the signed distances along a parallel to the coordinate axis to the other coordinate axis. Points on one side of the origin are assigned positive coordinate values, while those on the other side are assigned negative values. Cartesian coordinate systems are completely characterized by an origin, orientation and units. Importantly, map distances (not to be confused with true distances) between two points may be computed by the Pythagorean Theorem.

projection - a systematic presentation of intersecting coordinate lines on a flat surface upon which features from the curved surface of the earth may be mapped.

registration - the process of aligning a gridded overlay with a map, using map borders or features on the map.

standard parallels - parallels which are represented at their true scale. See Lambert conformal conic projection.

Universal Transverse Mercator System - a system covering the entire earth's surface, except for the polar caps, in which each of 60 north-south zones of width 6° is represented by a separate cylindrical projection of the earth's surface.

USGS - The United States Geological Survey, with headquarters in Reston, Virginia, a federal agency responsible for preparing standardized maps of the United States and territories, in addition to other functions.

UTM - Universal Transverse Mercator.

APPENDIX A

LAMBERT CONFORMAL CONIC PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34°20' and 36°20'

APPENDIX A

Lambert Conformal Conic Projection for Oklahoma
Standard Parallels 34°20' and 36°20'

Projection Constants

C	600 ,000 meters
Central Meridian	98° 00' 00".000
R_b	9 227 392.691 meters
y_o	222 094.620 meters
ℓ	0.57836 22321
$\frac{1}{2\,\rho_o^{\,2} \sin 1''}$	25.4085×10^{-10}
$\log \frac{1}{2\,\rho_o^{\,2} \sin 1''}$	1.404 9788 -10
$\log \ell$	9.76219 99251 -10
$\log K$	7.11929 20890

Computation Equations

$\theta'' = 0.57836\ 22321\ (352800''-\lambda'')$

$R = 13161\ 096.97\ [\tan \frac{Z}{2}]^{\,0.57836\ 22321}$

where $\tan \frac{Z}{2} = \left(\frac{1 + 0.08227\ 18542 \sin \phi}{1 - 0.08227\ 18542 \sin \phi} \right)^{0.0411359271} \cot (45° + \frac{\phi°}{2})$

$y' = R_b - R$

Scale ratio $K = \frac{0.57836\ 22321\ R}{N \cos \phi}$ where $N = \frac{6378206.4}{(1-0.00676\ 86579\ 97291 \sin^2 \phi)^{1/2}}$

APPENDIX B

LAMBERT PROJECTION FOR OKLAHOMA

TABLE B-1. LAMBERT PROJECTION FOR OKLAHOMA PAGE 1
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LATITUDE DEG	MIN	R (METERS)	Y-PRIME Y VALUE ON CENTRAL MERIDIAN (METERS)	TABULAR DIFFERENCE FOR 1 SEC OF LATITUDE (METERS)	SCALE IN UNITS OF 7TH PLACE OF LOGS	SCALE EXPRESSED AS A RATIO
33	0	9264381.29	-36988.60		2899.5	1.0006679
	1	9262531.71	-35139.02	30.82620	2849.1	1.0006562
	2	9260682.15	-33289.46	30.82601	2799.1	1.0006447
	3	9258832.61	-31439.92	30.82574	2749.4	1.0006333
	4	9256983.08	-29590.39	30.82547	2700.1	1.0006219
33	5	9255133.57	-27740.88	30.82520	2651.2	1.0006106
	6	9253284.07	-25891.38	30.82494	2602.6	1.0005994
	7	9251434.59	-24041.90	30.82468	2554.3	1.0005883
	8	9249585.13	-22192.44	30.82442	2506.4	1.0005773
	9	9247735.68	-20342.99	30.82417	2458.9	1.0005663
33	10	9245886.24	-18493.55	30.82392	2411.7	1.0005555
	11	9244036.82	-16644.13	30.82367	2364.9	1.0005447
	12	9242187.42	-14794.72	30.82342	2318.5	1.0005340
	13	9240338.03	-12945.33	30.82318	2272.4	1.0005234
	14	9238488.65	-11095.96	30.82293	2226.6	1.0005128
33	15	9236639.29	-9246.60	30.82269	2181.2	1.0005024
	16	9234789.94	-7397.25	30.82246	2136.2	1.0004920
	17	9232940.61	-5547.92	30.82222	2091.5	1.0004817
	18	9231091.29	-3698.60	30.82199	2047.2	1.0004715
	19	9229241.98	-1849.29	30.82176	2003.3	1.0004614
33	20	9227392.69	0.00	30.82153	1959.7	1.0004513
	21	9225543.41	1849.28	30.82131	1916.4	1.0004414
	22	9223694.15	3698.54	30.82109	1873.5	1.0004315
	23	9221844.89	5547.80	30.82087	1831.0	1.0004217
	24	9219995.66	7397.04	30.82065	1788.8	1.0004120
33	25	9218146.43	9246.26	30.82044	1747.0	1.0004024
	26	9216297.22	11095.47	30.82022	1705.6	1.0003928
	27	9214448.02	12944.68	30.82001	1664.5	1.0003833
	28	9212598.83	14793.86	30.81981	1623.7	1.0003740
	29	9210749.65	16643.04	30.81960	1583.4	1.0003646
33	30	9208900.49	18492.20	30.81940	1543.3	1.0003554
	31	9207051.33	20341.36	30.81920	1503.7	1.0003463
	32	9205202.19	22190.50	30.81901	1464.4	1.0003372
	33	9203353.06	24039.63	30.81882	1425.4	1.0003283
	34	9201503.95	25888.74	30.81862	1386.8	1.0003194

(Continued)

TABLE B-1. LAMBERT PROJECTION FOR OKLAHOMA PAGE 2
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LATITUDE DEG	LATITUDE MIN	R (METERS)	Y-PRIME Y VALUE ON CENTRAL MERIDIAN (METERS)	TABULAR DIFFERENCE FOR 1 SEC OF LATITUDE (METERS)	SCALE IN UNITS OF 7TH PLACE OF LOGS	SCALE EXPRESSED AS A RATIO
33	35	9199654.84	27737.65	30.81844	1348.6	1.0003106
	36	9197805.75	29586.94	30.81825	1310.7	1.0003018
	37	9195956.66	31436.03	30.81807	1273.2	1.0002932
	38	9194107.59	33285.10	30.81788	1236.0	1.0002846
	39	9192258.53	35134.16	30.81771	1199.2	1.0002762
33	40	9190409.47	36983.22	30.81753	1162.8	1.0002678
	41	9188560.43	38832.26	30.81736	1126.7	1.0002595
	42	9186711.40	40681.29	30.81719	1091.0	1.0002512
	43	9184862.38	42530.31	30.81702	1055.6	1.0002431
	44	9183013.37	44379.32	30.81685	1020.6	1.0002350
33	45	9181164.37	46228.32	30.81669	986.0	1.0002271
	46	9179315.38	48077.31	30.81653	951.7	1.0002192
	47	9177466.39	49926.30	30.81637	917.8	1.0002113
	48	9175617.42	51775.27	30.81622	884.2	1.0002036
	49	9173768.46	53624.23	30.81606	851.0	1.0001960
33	50	9171919.50	55473.19	30.81591	818.1	1.0001884
	51	9170070.56	57322.13	30.81577	785.6	1.0001809
	52	9168221.62	59171.07	30.81562	753.5	1.0001735
	53	9166372.69	61020.00	30.81548	721.7	1.0001662
	54	9164523.77	62868.92	30.81534	690.3	1.0001590
33	55	9162674.86	64717.83	30.81520	659.3	1.0001518
	56	9160825.95	66566.74	30.81507	628.6	1.0001447
	57	9158977.06	68415.63	30.81494	598.2	1.0001378
	58	9157128.17	70264.52	30.81481	568.3	1.0001309
	59	9155279.29	72113.40	30.81468	538.7	1.0001240
34	0	9153430.41	73962.28	30.81456	509.4	1.0001173
	1	9151581.55	75811.14	30.81443	480.5	1.0001106
	2	9149732.69	77660.00	30.81432	452.0	1.0001041
	3	9147883.84	79508.85	30.81420	423.8	1.0000976
	4	9146034.99	81357.70	30.81409	396.0	1.0000912
34	5	9144186.15	83206.54	30.81397	368.5	1.0000849
	6	9142337.32	85055.37	30.81386	341.4	1.0000786
	7	9140488.50	86904.19	30.81376	314.7	1.0000725
	8	9138639.68	88753.01	30.81365	288.3	1.0000664
	9	9136790.86	90601.83	30.81355	262.3	1.0000604

(Continued)

TABLE B-1. LAMBERT PROJECTION FOR OKLAHOMA PAGE 3
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LATITUDE DEG	MIN	R (METERS)	Y-PRIME Y VALUE ON CENTRAL MERIDIAN (METERS)	TABULAR DIFFERENCE FOR 1 SEC OF LATITUDE (METERS)	SCALE IN UNITS OF 7TH PLACE OF LOGS	SCALE EXPRESSED AS A RATIO
34	10	9134942.06	92450.63	30.81346	236.7	1.0000545
	11	9133093.26	94299.44	30.81336	211.4	1.0000487
	12	9131244.46	96148.23	30.81326	186.4	1.0000429
	13	9129395.67	97997.02	30.81318	161.9	1.0000373
	14	9127546.88	99845.81	30.81309	137.7	1.0000317
34	15	9125698.10	101694.59	30.81300	113.8	1.0000262
	16	9123849.33	103543.36	30.81292	90.3	1.0000208
	17	9122000.56	105392.13	30.81284	67.2	1.0000155
	18	9120151.79	107240.90	30.81276	44.4	1.0000102
	19	9118303.03	109089.66	30.81268	22.0	1.0000051
34	20	9116454.28	110938.42	30.81261	0.0	1.0000000
	21	9114605.52	112787.17	30.81254	-21.7	0.9999950
	22	9112756.77	114635.92	30.81247	-43.0	0.9999901
	23	9110908.03	116484.66	30.81241	-64.0	0.9999853
	24	9109059.29	118333.40	30.81235	-84.6	0.9999805
34	25	9107210.55	120182.14	30.81229	-104.8	0.9999759
	26	9105361.82	122030.87	30.81223	-124.7	0.9999713
	27	9103513.09	123879.60	30.81217	-144.2	0.9999668
	28	9101664.36	125728.33	30.81212	-163.3	0.9999624
	29	9099815.64	127577.06	30.81207	-182.1	0.9999581
34	30	9097966.91	129425.78	30.81203	-200.5	0.9999538
	31	9096118.20	131274.50	30.81198	-218.6	0.9999497
	32	9094269.48	133123.21	30.81194	-236.3	0.9999456
	33	9092420.76	134971.93	30.81190	-253.6	0.9999416
	34	9090572.05	136820.64	30.81186	-270.6	0.9999377
34	35	9088723.34	138669.35	30.81183	-287.2	0.9999339
	36	9086874.64	140518.06	30.81180	-303.5	0.9999301
	37	9085025.93	142366.76	30.81177	-319.4	0.9999265
	38	9083177.22	144215.47	30.81174	-334.9	0.9999229
	39	9081328.52	146064.17	30.81172	-350.0	0.9999194
34	40	9079479.82	147912.87	30.81170	-364.8	0.9999160
	41	9077631.13	149761.57	30.81168	-379.3	0.9999127
	42	9075782.42	151610.27	30.81167	-393.3	0.9999094
	43	9073933.72	153458.97	30.81165	-407.1	0.9999063
	44	9072085.02	155307.67	30.81164	-420.4	0.9999032

(Continued)

TABLE B-1. LAMBERT PROJECTION FOR OKLAHOMA PAGE 4
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LATITUDE DEG	MIN	R (METERS)	Y-PRIME Y VALUE ON CENTRAL MERIDIAN (METERS)	TABULAR DIFFERENCE FOR 1 SEC OF LATITUDE (METERS)	SCALE IN UNITS OF 7TH PLACE OF LOGS	SCALE EXPRESSED AS A RATIO
34	45	9070236.32	157156.37	30.81163	-433.4	0.9999002
	46	9068387.62	159005.07	30.81163	-446.0	0.9998973
	47	9066538.93	160853.76	30.81163	-458.3	0.9998945
	48	9064690.23	162702.46	30.81162	-470.2	0.9998917
	49	9062841.53	164551.16	30.81163	-481.7	0.9998891
34	50	9060992.83	166399.86	30.81163	-492.9	0.9998865
	51	9059144.14	168248.56	30.81164	-503.7	0.9998840
	52	9057295.44	170097.25	30.81165	-514.1	0.9998816
	53	9055446.74	171945.95	30.81166	-524.2	0.9998793
	54	9053598.04	173794.65	30.81168	-533.9	0.9998771
34	55	9051749.33	175643.36	30.81170	-543.3	0.9998749
	56	9049900.63	177492.06	30.81172	-552.2	0.9998729
	57	9048051.93	179340.76	30.81174	-560.9	0.9998709
	58	9046203.22	181189.47	30.81177	-569.1	0.9998690
	59	9044354.51	183038.18	30.81179	-577.0	0.9998671
35	0	9042505.80	184886.89	30.81182	-584.5	0.9998654
	1	9040657.09	186735.60	30.81186	-591.7	0.9998638
	2	9038808.38	188584.31	30.81190	-598.5	0.9998622
	3	9036959.66	190433.03	30.81193	-604.9	0.9998607
	4	9035110.94	192281.75	30.81198	-611.0	0.9998593
35	5	9033262.22	194130.47	30.81202	-616.7	0.9998580
	6	9031413.50	195979.19	30.81207	-622.1	0.9998568
	7	9029564.77	197827.92	30.81211	-627.0	0.9998556
	8	9027716.04	199676.65	30.81217	-631.7	0.9998546
	9	9025867.31	201525.38	30.81222	-635.9	0.9998536
35	10	9024018.57	203374.12	30.81228	-639.8	0.9998527
	11	9022169.83	205222.86	30.81234	-643.3	0.9998519
	12	9020321.09	207071.60	30.81240	-646.5	0.9998512
	13	9018472.34	208920.35	30.81247	-649.2	0.9998505
	14	9016623.59	210769.10	30.81253	-651.7	0.9998500
35	15	9014774.83	212617.86	30.81260	-653.7	0.9998495
	16	9012926.07	214466.62	30.81268	-655.4	0.9998491
	17	9011077.31	216315.38	30.81275	-656.7	0.9998488
	18	9009228.54	218164.15	30.81283	-657.7	0.9998486
	19	9007379.76	220012.93	30.81291	-658.3	0.9998484

(Continued)

TABLE B-1. LAMBERT PROJECTION FOR OKLAHOMA PAGE 5
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LATITUDE DEG	MIN	R (METERS)	Y-PRIME Y VALUE ON CENTRAL MERIDIAN (METERS)	TABULAR DIFFERENCE FOR 1 SEC OF LATITUDE (METERS)	SCALE IN UNITS OF 7TH PLACE OF LOGS	SCALE EXPRESSED AS A RATIO
35	20	9005530.98	221861.71	30.81299	-658.5	0.9998484
	21	9003682.20	223710.49	30.81308	-658.4	0.9998484
	22	9001833.41	225559.28	30.81317	-657.9	0.9998485
	23	8999984.61	227408.08	30.81326	-657.0	0.9998487
	24	8998135.81	229256.88	30.81335	-655.8	0.9998490
35	25	8996287.00	231105.69	30.81345	-654.2	0.9998494
	26	8994438.19	232954.50	30.81355	-652.2	0.9998498
	27	8992589.37	234803.32	30.81365	-649.9	0.9998504
	28	8990740.55	236652.14	30.81375	-647.2	0.9998510
	29	8988891.72	238500.97	30.81386	-644.1	0.9998517
35	30	8987042.88	240349.81	30.81397	-640.7	0.9998525
	31	8985194.03	242198.66	30.81408	-636.9	0.9998534
	32	8983345.18	244047.51	30.81419	-632.7	0.9998543
	33	8981496.32	245896.37	30.81431	-628.2	0.9998554
	34	8979647.46	247745.23	30.81443	-623.3	0.9998565
35	35	8977798.58	249594.11	30.81455	-618.0	0.9998577
	36	8975949.70	251442.99	30.81468	-612.4	0.9998590
	37	8974100.82	253291.88	30.81481	-606.4	0.9998604
	38	8972251.92	255140.77	30.81494	-600.0	0.9998619
	39	8970403.02	256989.68	30.81507	-593.3	0.9998634
35	40	8968554.10	258838.59	30.81520	-586.2	0.9998650
	41	8966705.18	260687.51	30.81534	-578.7	0.9998668
	42	8964856.25	262536.44	30.81548	-570.9	0.9998686
	43	8963007.32	264385.38	30.81563	-562.7	0.9998704
	44	8961158.37	266234.32	30.81577	-554.1	0.9998724
35	45	8959309.41	268083.28	30.81592	-545.2	0.9998745
	46	8957460.45	269932.24	30.81607	-535.9	0.9998766
	47	8955611.48	271781.21	30.81623	-526.2	0.9998789
	48	8953762.49	273630.20	30.81638	-516.1	0.9998812
	49	8951913.50	275479.19	30.81654	-505.7	0.9998836
35	50	8950064.50	277328.19	30.81670	-494.9	0.9998860
	51	8948215.49	279177.20	30.81687	-483.8	0.9998886
	52	8946366.46	281026.23	30.81704	-472.3	0.9998913
	53	8944517.43	282875.26	30.81721	-460.4	0.9998940
	54	8942668.39	284724.30	30.81738	-448.1	0.9998968

(Continued)

TABLE B-1. LAMBERT PROJECTION FOR OKLAHOMA PAGE 6
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LATITUDE DEG	MIN	R (METERS)	Y-PRIME Y VALUE ON CENTRAL MERIDIAN (METERS)	TABULAR DIFFERENCE FOR 1 SEC OF LATITUDE (METERS)	SCALE IN UNITS OF 7TH PLACE OF LOGS	SCALE EXPRESSED AS A RATIO
35	55	8940819.34	286573.35	30.81755	-435.5	0.9998997
	56	8938970.27	288422.42	30.81773	-422.5	0.9999027
	57	8937121.20	290271.49	30.81791	-409.2	0.9999058
	58	8935272.11	292120.58	30.81809	-395.4	0.9999089
	59	8933423.02	293969.67	30.81828	-381.4	0.9999122
36	0	8931573.91	295818.78	30.81847	-366.9	0.9999155
	1	8929724.79	297667.90	30.81866	-352.1	0.9999189
	2	8927875.66	299517.03	30.81885	-336.8	0.9999224
	3	8926026.51	301366.18	30.81905	-321.3	0.9999260
	4	8924177.36	303215.33	30.81924	-305.3	0.9999297
36	5	8922328.19	305064.50	30.81945	-289.0	0.9999335
	6	8920479.01	306913.68	30.81965	-272.3	0.9999373
	7	8918629.82	308762.87	30.81986	-255.3	0.9999412
	8	8916780.62	310612.07	30.82006	-237.9	0.9999452
	9	8914931.40	312461.29	30.82028	-220.1	0.9999493
36	10	8913082.17	314310.52	30.82049	-201.9	0.9999535
	11	8911232.93	316159.76	30.82071	-183.4	0.9999578
	12	8909383.67	318009.02	30.82093	-164.5	0.9999621
	13	8907534.41	319858.29	30.82115	-145.2	0.9999666
	14	8905685.12	321707.57	30.82138	-125.6	0.9999711
36	15	8903835.83	323556.86	30.82160	-105.6	0.9999757
	16	8901986.52	325406.17	30.82183	-85.2	0.9999804
	17	8900137.19	327255.50	30.82207	-64.5	0.9999852
	18	8898287.85	329104.84	30.82230	-43.3	0.9999900
	19	8896438.50	330954.19	30.82254	-21.9	0.9999950
36	20	8894589.14	332803.56	30.82278	0.0	1.0000000
	21	8892739.75	334652.94	30.82302	22.2	1.0000051
	22	8890890.36	336502.33	30.82327	44.8	1.0000103
	23	8889040.95	338351.74	30.82352	67.8	1.0000156
	24	8887191.52	340201.17	30.82377	91.1	1.0000210
36	25	8885342.08	342050.61	30.82403	114.9	1.0000264
	26	8883492.62	343900.07	30.82428	138.9	1.0000320
	27	8881643.15	345749.54	30.82454	163.4	1.0000376
	28	8879793.66	347599.03	30.82480	188.2	1.0000433
	29	8877944.16	349448.53	30.82507	213.4	1.0000491

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TABLE B-1. LAMBERT PROJECTION FOR OKLAHOMA PAGE 7
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LATITUDE DEG	MIN	R (METERS)	I-PRIME I VALUE ON CENTRAL MERIDIAN (METERS)	TABULAR DIFFERENCE FOR 1 SEC OF LATITUDE (METERS)	SCALE IN UNITS OF 7TH PLACE OF LOGS	SCALE EXPRESSED AS A RATIO
36	30	8876094.64	351298.05	30.82534	239.0	1.0000550
	31	8874245.10	353147.59	30.82561	264.9	1.0000610
	32	8872395.55	354997.14	30.82588	291.2	1.0000671
	33	8870545.98	356846.71	30.82615	317.9	1.0000732
	34	8868696.39	358696.30	30.82643	345.0	1.0000794
36	35	8866846.79	360545.90	30.82671	372.4	1.0000858
	36	8864997.17	362395.52	30.82700	400.2	1.0000922
	37	8863147.53	364245.16	30.82728	428.4	1.0000986
	38	8861297.88	366094.81	30.82757	456.9	1.0001052
	39	8859448.21	367944.48	30.82786	485.8	1.0001119
36	40	8857598.53	369794.17	30.82816	515.1	1.0001186
	41	8855748.81	371643.88	30.82845	544.8	1.0001255
	42	8853899.08	373493.61	30.82875	574.8	1.0001324
	43	8852049.34	375343.35	30.82906	605.2	1.0001394
	44	8850199.58	377193.11	30.82936	636.0	1.0001465
36	45	8848349.80	379042.89	30.82967	667.2	1.0001536
	46	8846500.00	380892.69	30.82998	698.7	1.0001609
	47	8844650.18	382742.51	30.83029	730.6	1.0001682
	48	8842800.35	384592.34	30.83060	762.9	1.0001757
	49	8840950.49	386442.20	30.83092	795.5	1.0001832
36	50	8839100.62	388292.07	30.83124	828.5	1.0001908
	51	8837250.72	390141.97	30.83157	861.9	1.0001985
	52	8835400.81	391991.88	30.83189	895.7	1.0002063
	53	8833550.88	393841.81	30.83222	929.8	1.0002141
	54	8831700.92	395691.77	30.83255	964.3	1.0002221
36	55	8829850.95	397541.74	30.83289	999.2	1.0002301
	56	8828000.96	399391.73	30.83322	1034.4	1.0002382
	57	8826150.94	401241.75	30.83356	1070.1	1.0002464
	58	8824300.91	403091.78	30.83390	1106.1	1.0002547
	59	8822450.85	404941.84	30.83425	1142.4	1.0002631
37	0	8820600.78	406791.91	30.83460	1179.2	1.0002716
	1	8818750.68	408642.01	30.83495	1216.3	1.0002801
	2	8816900.56	410492.13	30.83530	1253.8	1.0002887
	3	8815050.42	412342.27	30.83566	1291.7	1.0002975
	4	8813200.26	414192.43	30.83601	1329.9	1.0003063

(Continued)

TABLE B-1. LAMBERT PROJECTION FOR OKLAHOMA PAGE 8
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LATITUDE DEG	MIN	R (METERS)	Y-PRIME Y VALUE ON CENTRAL MERIDIAN (METERS)	TABULAR DIFFERENCE FOR 1 SEC OF LATITUDE (METERS)	SCALE IN UNITS OF 7TH PLACE OF LOGS	SCALE EXPRESSED AS A RATIO
37	5	8811350.08	416042.61	30.83637	1368.6	1.0003152
	6	8809499.88	417892.81	30.83674	1407.6	1.0003242
	7	8807649.65	419743.04	30.83710	1446.9	1.0003332
	8	8805799.40	421593.29	30.83747	1486.7	1.0003424
	9	8803949.13	423443.56	30.83784	1526.8	1.0003516
37	10	8802098.84	425293.85	30.83822	1567.3	1.0003609
	11	8800248.52	427144.17	30.83859	1608.2	1.0003704
	12	8798398.18	428994.51	30.83897	1649.4	1.0003799
	13	8796547.82	430844.87	30.83936	1691.0	1.0003895
	14	8794697.44	432695.25	30.83974	1733.0	1.0003991
37	15	8792847.03	434545.66	30.84013	1775.4	1.0004089
	16	8790996.60	436396.09	30.84052	1818.1	1.0004187
	17	8789146.15	438246.55	30.84091	1861.3	1.0004287
	18	8787295.67	440097.02	30.84131	1904.8	1.0004387
	19	8785445.16	441947.53	30.84171	1948.6	1.0004488
37	20	8783594.64	443798.05	30.84211	1992.9	1.0004590
	21	8781744.09	445648.60	30.84251	2037.5	1.0004693
	22	8779893.51	447499.18	30.84292	2082.5	1.0004796
	23	8778042.91	449349.78	30.84332	2127.9	1.0004901
	24	8776192.29	451200.40	30.84374	2173.6	1.0005006
37	25	8774341.64	453051.05	30.84415	2219.8	1.0005113
	26	8772490.97	454901.73	30.84457	2266.3	1.0005220
	27	8770640.27	456752.42	30.84499	2313.2	1.0005328
	28	8768789.54	458603.15	30.84541	2360.4	1.0005437
	29	8766938.79	460453.90	30.84583	2408.1	1.0005546
37	30	8765088.02	462304.67	30.84626	2456.1	1.0005657
	31	8763237.21	464155.48	30.84669	2504.5	1.0005768
	32	8761386.39	466006.30	30.84713	2553.2	1.0005881
	33	8759535.53	467857.16	30.84756	2602.4	1.0005994
	34	8757684.65	469708.04	30.84800	2651.9	1.0006108
37	35	8755833.75	471558.94	30.84844	2701.8	1.0006223
	36	8753982.81	473409.86	30.84889	2752.1	1.0006339
	37	8752131.85	475260.84	30.84933	2802.7	1.0006456
	38	8750280.87	477111.83	30.84978	2853.7	1.0006573
	39	8748429.85	478962.84	30.85023	2905.1	1.0006692

(Continued)

TABLE B-1. LAMBERT PROJECTION FOR OKLAHOMA PAGE 9
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS
(Concluded)

LATITUDE DEG	MIN	R (METERS)	Y-PRIME Y VALUE ON CENTRAL MERIDIAN (METERS)	TABULAR DIFFERENCE FOR 1 SEC OF LATITUDE (METERS)	SCALE IN UNITS OF 7TH PLACE OF LOGS	SCALE EXPRESSED AS A RATIO
37	40	8746578.81	480813.88	30.85069	2956.9	1.0006811
	41	8744727.74	482664.95	30.85115	3009.1	1.0006931
	42	8742876.65	484516.05	30.85161	3061.6	1.0007052
	43	8741025.52	486367.17	30.85207	3114.5	1.0007174
	44	8739174.37	488218.32	30.85254	3167.8	1.0007297
37	45	8737323.19	490069.50	30.85300	3221.5	1.0007421
	46	8735471.98	491920.71	30.85348	3275.6	1.0007545
	47	8733620.74	493771.95	30.85395	3330.0	1.0007671
	48	8731769.48	495623.21	30.85443	3384.8	1.0007797
	49	8729918.18	497474.51	30.85491	3440.0	1.0007924
37	50	8728066.86	499325.83	30.85539	3495.5	1.0008052
	51	8726215.51	501177.18	30.85587	3551.5	1.0008181
	52	8724364.13	503028.57	30.85636	3607.8	1.0008311
	53	8722512.71	504879.98	30.85685	3664.5	1.0008441
	54	8720661.27	506731.42	30.85734	3721.6	1.0008573
37	55	8718809.80	508582.89	30.85784	3779.0	1.0008705
	56	8716958.30	510434.39	30.85834	3836.9	1.0008839
	57	8715106.77	512285.92	30.85884	3895.1	1.0008973
	58	8713255.21	514137.48	30.85934	3953.7	1.0009108
	59	8711403.62	515989.07	30.85985	4012.7	1.0009244
38	0	8709552.00	517840.69	30.86036	4072.0	1.0009381

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
94	0	2	18	48.4160	2.31344493
	1	2	18	13.7148	2.30380956
	2	2	17	39.0127	2.29417019
	3	2	17	4.3105	2.28453082
	4	2	16	29.6094	2.27489145
94	5	2	15	54.9077	2.26525208
	6	2	15	20.2056	2.25561271
	7	2	14	45.5039	2.24597333
	8	2	14	10.8022	2.23633396
	9	2	13	36.1006	2.22669459
94	10	2	13	1.3989	2.21705522
	11	2	12	26.6973	2.20741585
	12	2	11	51.9951	2.19777648
	13	2	11	17.2935	2.18813711
	14	2	10	42.5918	2.17849774
94	15	2	10	7.8901	2.16885837
	16	2	9	33.1885	2.15921900
	17	2	8	58.4868	2.14957963
	18	2	8	23.7852	2.13994026
	19	2	7	49.0830	2.13030089
94	20	2	7	14.3813	2.12066152
	21	2	6	39.6797	2.11102215
	22	2	6	4.9780	2.10138278
	23	2	5	30.2764	2.09174341
	24	2	4	55.5747	2.08210404
94	25	2	4	20.8726	2.07246467
	26	2	3	46.1709	2.06282529
	27	2	3	11.4692	2.05318592
	28	2	2	36.7676	2.04354655
	29	2	2	2.0659	2.03390718
94	30	2	1	27.3643	2.02426781
	31	2	0	52.6626	2.01462844
	32	2	0	17.9604	2.00498907
	33	1	59	43.2588	1.99534970
	34	1	59	8.5571	1.98571033

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
94	35	1	58	33.8555	1.97607096
	36	1	57	59.1538	1.96643159
	37	1	57	24.4521	1.95679222
	38	1	56	49.7505	1.94715285
	39	1	56	15.0483	1.93751348
94	40	1	55	40.3467	1.92787411
	41	1	55	5.6450	1.91823474
	42	1	54	30.9434	1.90859537
	43	1	53	56.2417	1.89895600
	44	1	53	21.5400	1.88931662
94	45	1	52	46.8379	1.87967725
	46	1	52	12.1362	1.87003788
	47	1	51	37.4346	1.86039851
	48	1	51	2.7329	1.85075914
	49	1	50	28.0313	1.84111977
94	50	1	49	53.3296	1.83148040
	51	1	49	18.6279	1.82184103
	52	1	48	43.9258	1.81220166
	53	1	48	9.2241	1.80256229
	54	1	47	34.5225	1.79292292
94	55	1	46	59.8208	1.78328355
	56	1	46	25.1191	1.77364418
	57	1	45	50.4175	1.76400481
	58	1	45	15.7158	1.75436544
	59	1	44	41.0137	1.74472607
95	0	1	44	6.3120	1.73508670
	1	1	43	31.6104	1.72544733
	2	1	42	56.9087	1.71580796
	3	1	42	22.2070	1.70616858
	4	1	41	47.5054	1.69652921
95	5	1	41	12.8032	1.68688984
	6	1	40	38.1016	1.67725047
	7	1	40	3.3999	1.66761110
	8	1	39	28.6982	1.65797173
	9	1	38	53.9966	1.64833236

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
95	10	1	38	19.2949	1.63869299
	11	1	37	44.5933	1.62905362
	12	1	37	9.8911	1.61941425
	13	1	36	35.1895	1.60977488
	14	1	36	0.4878	1.60013551
95	15	1	35	25.7861	1.59049614
	16	1	34	51.0845	1.58085677
	17	1	34	16.3828	1.57121740
	18	1	33	41.6807	1.56157803
	19	1	33	6.9790	1.55193866
95	20	1	32	32.2773	1.54229929
	21	1	31	57.5757	1.53265992
	22	1	31	22.8740	1.52302054
	23	1	30	48.1724	1.51338117
	24	1	30	13.4707	1.50374180
95	25	1	29	38.7686	1.49410243
	26	1	29	4.0669	1.48446306
	27	1	28	29.3652	1.47482369
	28	1	27	54.6636	1.46518432
	29	1	27	19.9619	1.45554495
95	30	1	26	45.2603	1.44590558
	31	1	26	10.5586	1.43626621
	32	1	25	35.8564	1.42662684
	33	1	25	1.1548	1.41698747
	34	1	24	26.4531	1.40734810
95	35	1	23	51.7515	1.39770873
	36	1	23	17.0498	1.38806936
	37	1	22	42.3481	1.37842999
	38	1	22	7.6460	1.36879062
	39	1	21	32.9443	1.35915125
95	40	1	20	58.2427	1.34951187
	41	1	20	23.5410	1.33987250
	42	1	19	48.8394	1.33023313
	43	1	19	14.1377	1.32059376
	44	1	18	39.4360	1.31095439

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
95	45	1	18	4.7339	1.30131502
	46	1	17	30.0322	1.29167565
	47	1	16	55.3306	1.28203628
	48	1	16	20.6289	1.27239691
	49	1	15	45.9272	1.26275754
95	50	1	15	11.2256	1.25311817
	51	1	14	36.5234	1.24347880
	52	1	14	1.8218	1.23383943
	53	1	13	27.1201	1.22420006
	54	1	12	52.4185	1.21456069
95	55	1	12	17.7168	1.20492132
	56	1	11	43.0151	1.19528195
	57	1	11	8.3135	1.18564258
	58	1	10	33.6113	1.17600321
	59	1	9	58.9097	1.16636383
96	0	1	9	24.2080	1.15672446
	1	1	8	49.5063	1.14708509
	2	1	8	14.8047	1.13744572
	3	1	7	40.1028	1.12780635
	4	1	7	5.4011	1.11816698
96	5	1	6	30.6995	1.10852761
	6	1	5	55.9976	1.09888824
	7	1	5	21.2959	1.08924887
	8	1	4	46.5942	1.07960950
	9	1	4	11.8926	1.06997013
96	10	1	3	37.1907	1.06033076
	11	1	3	2.4890	1.05069139
	12	1	2	27.7874	1.04105202
	13	1	1	53.0854	1.03141265
	14	1	1	18.3838	1.02177328
96	15	1	0	43.6821	1.01213391
	16	1	0	8.9802	1.00249454
	17	0	59	34.2786	0.99285517
	18	0	58	59.5769	0.98321579
	19	0	58	24.8752	0.97357642

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
96	20	0	57	50.1733	0.96393705
	21	0	57	15.4717	0.95429768
	22	0	56	40.7700	0.94465831
	23	0	56	6.0681	0.93501894
	24	0	55	31.3665	0.92537957
96	25	0	54	56.6648	0.91574020
	26	0	54	21.9629	0.90610083
	27	0	53	47.2612	0.89646146
	28	0	53	12.5596	0.88682209
	29	0	52	37.8577	0.87718272
96	30	0	52	3.1560	0.86754335
	31	0	51	28.4543	0.85790398
	32	0	50	53.7527	0.84826461
	33	0	50	19.0508	0.83862524
	34	0	49	44.3491	0.82898587
96	35	0	49	9.6475	0.81934650
	36	0	48	34.9456	0.80970712
	37	0	48	0.2439	0.80006775
	38	0	47	25.5422	0.79042838
	39	0	46	50.8403	0.78078901
96	40	0	46	16.1387	0.77114964
	41	0	45	41.4370	0.76151027
	42	0	45	6.7354	0.75187090
	43	0	44	32.0334	0.74223153
	44	0	43	57.3318	0.73259216
96	45	0	43	22.6301	0.72295279
	46	0	42	47.9282	0.71331342
	47	0	42	13.2266	0.70367405
	48	0	41	38.5249	0.69403468
	49	0	41	3.8230	0.68439531
96	50	0	40	29.1213	0.67475594
	51	0	39	54.4197	0.66511657
	52	0	39	19.7180	0.65547720
	53	0	38	45.0161	0.64583783
	54	0	38	10.3145	0.63619846

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE		THETA			FRACTIONAL
DEG	MIN	DEG	MIN	SECONDS	DEGREES
96	55	0	37	35.6128	0.62655908
	56	0	37	0.9109	0.61691971
	57	0	36	26.2092	0.60728034
	58	0	35	51.5076	0.59764097
	59	0	35	16.8057	0.58800160
97	0	0	34	42.1040	0.57836223
	1	0	34	7.4023	0.56872286
	2	0	33	32.7006	0.55908349
	3	0	32	57.9988	0.54944412
	4	0	32	23.2971	0.53980475
97	5	0	31	48.5953	0.53016538
	6	0	31	13.8937	0.52052601
	7	0	30	39.1919	0.51088664
	8	0	30	4.4901	0.50124727
	9	0	29	29.7885	0.49160790
97	10	0	28	55.0867	0.48196853
	11	0	28	20.3850	0.47232916
	12	0	27	45.6832	0.46268979
	13	0	27	10.9814	0.45305042
	14	0	26	36.2798	0.44341104
97	15	0	26	1.5780	0.43377167
	16	0	25	26.8763	0.42413230
	17	0	24	52.1746	0.41449293
	18	0	24	17.4728	0.40485356
	19	0	23	42.7711	0.39521419
97	20	0	23	8.0693	0.38557482
	21	0	22	33.3677	0.37593545
	22	0	21	58.6659	0.36629608
	23	0	21	23.9641	0.35665671
	24	0	20	49.2625	0.34701734
97	25	0	20	14.5607	0.33737797
	26	0	19	39.8590	0.32773860
	27	0	19	5.1572	0.31809923
	28	0	18	30.4554	0.30845986
	29	0	17	55.7538	0.29882049

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
97	30	0	17	21.0520	0.28918112
	31	0	16	46.3503	0.27954175
	32	0	16	11.6486	0.26990237
	33	0	15	36.9468	0.26026300
	34	0	15	2.2451	0.25062363
97	35	0	14	27.5433	0.24098426
	36	0	13	52.8416	0.23134489
	37	0	13	18.1399	0.22170552
	38	0	12	43.4382	0.21206615
	39	0	12	8.7364	0.20242678
97	40	0	11	34.0347	0.19278741
	41	0	10	59.3329	0.18314804
	42	0	10	24.6312	0.17350867
	43	0	9	49.9295	0.16386930
	44	0	9	15.2277	0.15422993
97	45	0	8	40.5260	0.14459056
	46	0	8	5.8243	0.13495119
	47	0	7	31.1225	0.12531182
	48	0	6	56.4208	0.11567245
	49	0	6	21.7191	0.10603308
97	50	0	5	47.0173	0.09639371
	51	0	5	12.3156	0.08675433
	52	0	4	37.6139	0.07711496
	53	0	4	2.9121	0.06747559
	54	0	3	28.2104	0.05783622
97	55	0	2	53.5087	0.04819685
	56	0	2	18.8069	0.03855748
	57	0	1	44.1052	0.02891811
	58	0	1	9.4035	0.01927874
	59	0	0	34.7017	0.00963937
98	0	0	0	0.0000	0.00000000
	1	-0	0	34.7017	-0.00963937
	2	-0	1	9.4035	-0.01927874
	3	-0	1	44.1052	-0.02891811
	4	-0	2	18.8069	-0.03855748

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
98	5	-0	2	53.5087	-0.04819685
	6	-0	3	28.2104	-0.05783622
	7	-0	4	2.9121	-0.06747559
	8	-0	4	37.6139	-0.07711496
	9	-0	5	12.3156	-0.08675433
98	10	-0	5	47.0173	-0.09639371
	11	-0	6	21.7191	-0.10603308
	12	-0	6	56.4208	-0.11567245
	13	-0	7	31.1225	-0.12531182
	14	-0	8	5.8243	-0.13495119
98	15	-0	8	40.5260	-0.14459056
	16	-0	9	15.2277	-0.15422993
	17	-0	9	49.9295	-0.16386930
	18	-0	10	24.6312	-0.17350867
	19	-0	10	59.3329	-0.18314804
98	20	-0	11	34.0347	-0.19278741
	21	-0	12	8.7364	-0.20242678
	22	-0	12	43.4382	-0.21206615
	23	-0	13	18.1399	-0.22170552
	24	-0	13	52.8416	-0.23134489
98	25	-0	14	27.5433	-0.24098426
	26	-0	15	2.2451	-0.25062363
	27	-0	15	36.9468	-0.26026300
	28	-0	16	11.6486	-0.26990237
	29	-0	16	46.3503	-0.27954175
98	30	-0	17	21.0520	-0.28918112
	31	-0	17	55.7538	-0.29882049
	32	-0	18	30.4554	-0.30845986
	33	-0	19	5.1572	-0.31809923
	34	-0	19	39.8590	-0.32773860
98	35	-0	20	14.5607	-0.33737797
	36	-0	20	49.2625	-0.34701734
	37	-0	21	23.9641	-0.35665671
	38	-0	21	58.6659	-0.36629608
	39	-0	22	33.3677	-0.37593545

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
98	40	-0	23	8.0693	-0.38557482
	41	-0	23	42.7711	-0.39521419
	42	-0	24	17.4728	-0.40485356
	43	-0	24	52.1746	-0.41449293
	44	-0	25	26.8763	-0.42413230
98	45	-0	26	1.5780	-0.43377167
	46	-0	26	36.2798	-0.44341104
	47	-0	27	10.9814	-0.45305042
	48	-0	27	45.6832	-0.46268979
	49	-0	28	20.3850	-0.47232916
98	50	-0	28	55.0867	-0.48196853
	51	-0	29	29.7885	-0.49160790
	52	-0	30	4.4901	-0.50124727
	53	-0	30	39.1919	-0.51088664
	54	-0	31	13.8937	-0.52052601
98	55	-0	31	48.5953	-0.53016538
	56	-0	32	23.2971	-0.53980475
	57	-0	32	57.9988	-0.54944412
	58	-0	33	32.7006	-0.55908349
	59	-0	34	7.4023	-0.56872286
99	0	-0	34	42.1040	-0.57836223
	1	-0	35	16.8057	-0.58800160
	2	-0	35	51.5076	-0.59764097
	3	-0	36	26.2092	-0.60728034
	4	-0	37	0.9109	-0.61691971
99	5	-0	37	35.6128	-0.62655908
	6	-0	38	10.3145	-0.63619846
	7	-0	38	45.0161	-0.64583783
	8	-0	39	19.7180	-0.65547720
	9	-0	39	54.4197	-0.66511657
99	10	-0	40	29.1213	-0.67475594
	11	-0	41	3.8230	-0.68439531
	12	-0	41	38.5249	-0.69403468
	13	-0	42	13.2266	-0.70367405
	14	-0	42	47.9282	-0.71331342

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
99	15	-0	43	22.6301	-0.72295279
	16	-0	43	57.3318	-0.73259216
	17	-0	44	32.0334	-0.74223153
	18	-0	45	6.7354	-0.75187090
	19	-0	45	41.4370	-0.76151027
99	20	-0	46	16.1387	-0.77114964
	21	-0	46	50.8403	-0.78078901
	22	-0	47	25.5422	-0.79042838
	23	-0	48	0.2439	-0.80006775
	24	-0	48	34.9456	-0.80970712
99	25	-0	49	9.6475	-0.81934650
	26	-0	49	44.3491	-0.82898587
	27	-0	50	19.0508	-0.83862524
	28	-0	50	53.7527	-0.84826461
	29	-0	51	28.4543	-0.85790398
99	30	-0	52	3.1560	-0.86754335
	31	-0	52	37.8577	-0.87718272
	32	-0	53	12.5596	-0.88682209
	33	-0	53	47.2612	-0.89646146
	34	-0	54	21.9629	-0.90610083
99	35	-0	54	56.6648	-0.91574020
	36	-0	55	31.3665	-0.92537957
	37	-0	56	6.0681	-0.93501894
	38	-0	56	40.7700	-0.94465831
	39	-0	57	15.4717	-0.95429768
99	40	-0	57	50.1733	-0.96393705
	41	-0	58	24.8752	-0.97357642
	42	-0	58	59.5769	-0.98321579
	43	-0	59	34.2786	-0.99285517
	44	-1	0	8.9802	-1.00249454
99	45	-1	0	43.6821	-1.01213391
	46	-1	1	18.3838	-1.02177328
	47	-1	1	53.0854	-1.03141265
	48	-1	2	27.7874	-1.04105202
	49	-1	3	2.4890	-1.05069139

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
99	50	-1	3	37.1907	-1.06033076
	51	-1	4	11.8926	-1.06997013
	52	-1	4	46.5942	-1.07960950
	53	-1	5	21.2959	-1.08924887
	54	-1	5	55.9976	-1.09888824
99	55	-1	6	30.6995	-1.10852761
	56	-1	7	5.4011	-1.11816698
	57	-1	7	40.1028	-1.12780635
	58	-1	8	14.8047	-1.13744572
	59	-1	8	49.5063	-1.14708509
100	0	-1	9	24.2080	-1.15672446
	1	-1	9	58.9097	-1.16636383
	2	-1	10	33.6113	-1.17600321
	3	-1	11	8.3135	-1.18564258
	4	-1	11	43.0151	-1.19528195
100	5	-1	12	17.7168	-1.20492132
	6	-1	12	52.4185	-1.21456069
	7	-1	13	27.1201	-1.22420006
	8	-1	14	1.8218	-1.23383943
	9	-1	14	36.5234	-1.24347880
100	10	-1	15	11.2256	-1.25311817
	11	-1	15	45.9272	-1.26275754
	12	-1	16	20.6289	-1.27239691
	13	-1	16	55.3306	-1.28203628
	14	-1	17	30.0322	-1.29167565
100	15	-1	18	4.7339	-1.30131502
	16	-1	18	39.4360	-1.31095439
	17	-1	19	14.1377	-1.32059376
	18	-1	19	48.8394	-1.33023313
	19	-1	20	23.5410	-1.33987250
100	20	-1	20	58.2427	-1.34951187
	21	-1	21	32.9443	-1.35915125
	22	-1	22	7.6460	-1.36879062
	23	-1	22	42.3481	-1.37842999
	24	-1	23	17.0498	-1.38806936

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
100	25	-1	23	51.7515	-1.39770873
	26	-1	24	26.4531	-1.40734810
	27	-1	25	1.1548	-1.41698747
	28	-1	25	35.8564	-1.42662684
	29	-1	26	10.5586	-1.43626621
100	30	-1	26	45.2603	-1.44590558
	31	-1	27	19.9619	-1.45554495
	32	-1	27	54.6636	-1.46518432
	33	-1	28	29.3652	-1.47482369
	34	-1	29	4.0669	-1.48446306
100	35	-1	29	38.7686	-1.49410243
	36	-1	30	13.4707	-1.50374180
	37	-1	30	48.1724	-1.51338117
	38	-1	31	22.8740	-1.52302054
	39	-1	31	57.5757	-1.53265992
100	40	-1	32	32.2773	-1.54229929
	41	-1	33	6.9790	-1.55193868
	42	-1	33	41.6807	-1.56157803
	43	-1	34	16.3828	-1.57121740
	44	-1	34	51.0845	-1.58085677
100	45	-1	35	25.7861	-1.59049614
	46	-1	36	0.4878	-1.60013551
	47	-1	36	35.1895	-1.60977488
	48	-1	37	9.8911	-1.61941425
	49	-1	37	44.5933	-1.62905362
100	50	-1	38	19.2949	-1.63869299
	51	-1	38	53.9966	-1.64833236
	52	-1	39	28.6982	-1.65797173
	53	-1	40	3.3999	-1.66761110
	54	-1	40	38.1016	-1.67725047
100	55	-1	41	12.8032	-1.68688984
	56	-1	41	47.5054	-1.69652921
	57	-1	42	22.2070	-1.70616858
	58	-1	42	56.9087	-1.71580796
	59	-1	43	31.6104	-1.72544733

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	MIN	THETA DEG	MIN	SECONDS	FRACTIONAL DEGREES
101	0	-1	44	6.3120	-1.73508670
	1	-1	44	41.0137	-1.74472607
	2	-1	45	15.7153	-1.75436544
	3	-1	45	50.4175	-1.76400481
	4	-1	46	25.1191	-1.77364418
101	5	-1	46	59.8208	-1.78328355
	6	-1	47	34.5225	-1.79292292
	7	-1	48	9.2241	-1.80256229
	8	-1	48	43.9258	-1.81220166
	9	-1	49	18.6279	-1.82184103
101	10	-1	49	53.3296	-1.83148040
	11	-1	50	28.0313	-1.84111977
	12	-1	51	2.7329	-1.85075914
	13	-1	51	37.4346	-1.86039851
	14	-1	52	12.1362	-1.87003788
101	15	-1	52	46.8379	-1.87967725
	16	-1	53	21.5400	-1.88931662
	17	-1	53	56.2417	-1.89895600
	18	-1	54	30.9434	-1.90859537
	19	-1	55	5.6450	-1.91823474
101	20	-1	55	40.3467	-1.92787411
	21	-1	56	15.0483	-1.93751348
	22	-1	56	49.7505	-1.94715285
	23	-1	57	24.4521	-1.95679222
	24	-1	57	59.1538	-1.96643159
101	25	-1	58	33.8555	-1.97607096
	26	-1	59	8.5571	-1.98571033
	27	-1	59	43.2588	-1.99534970
	28	-2	0	17.9604	-2.00498907
	29	-2	0	52.6626	-2.01462844
101	30	-2	1	27.3643	-2.02426781
	31	-2	2	2.0659	-2.03390718
	32	-2	2	36.7676	-2.04354655
	33	-2	3	11.4692	-2.05318592
	34	-2	3	46.1709	-2.06282529

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
101	35	-2	4	20.8726	-2.07246467
	36	-2	4	55.5747	-2.08210404
	37	-2	5	30.2764	-2.09174341
	38	-2	6	4.9780	-2.10138278
	39	-2	6	39.6797	-2.11102215
101	40	-2	7	14.3813	-2.12066152
	41	-2	7	49.0830	-2.13030089
	42	-2	8	23.7852	-2.13994026
	43	-2	8	58.4868	-2.14957963
	44	-2	9	33.1885	-2.15921900
101	45	-2	10	7.8901	-2.16885837
	46	-2	10	42.5918	-2.17849774
	47	-2	11	17.2935	-2.18813711
	48	-2	11	51.9951	-2.19777648
	49	-2	12	26.6973	-2.20741585
101	50	-2	13	1.3989	-2.21705522
	51	-2	13	36.1006	-2.22669459
	52	-2	14	10.8022	-2.23633396
	53	-2	14	45.5039	-2.24597333
	54	-2	15	20.2056	-2.25561271
101	55	-2	15	54.9077	-2.26525208
	56	-2	16	29.6094	-2.27489145
	57	-2	17	4.3105	-2.28453082
	58	-2	17	39.0127	-2.29417019
	59	-2	18	13.7148	-2.30380956
102	0	-2	18	48.4160	-2.31344893
	1	-2	19	23.1182	-2.32308830
	2	-2	19	57.8199	-2.33272767
	3	-2	20	32.5215	-2.34236704
	4	-2	21	7.2227	-2.35200641
102	5	-2	21	41.9248	-2.36164578
	6	-2	22	16.6270	-2.37128515
	7	-2	22	51.3281	-2.38092452
	8	-2	23	26.0303	-2.39056389
	9	-2	24	0.7314	-2.40020326

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
102	10	-2	24	35.4336	-2.40984263
	11	-2	25	10.1348	-2.41948200
	12	-2	25	44.8369	-2.42912137
	13	-2	26	19.5391	-2.43876075
	14	-2	26	54.2402	-2.44840012
102	15	-2	27	28.9424	-2.45803949
	16	-2	28	3.6436	-2.46767886
	17	-2	28	38.3457	-2.47731823
	18	-2	29	13.0469	-2.48695760
	19	-2	29	47.7490	-2.49659697
102	20	-2	30	22.4512	-2.50623634
	21	-2	30	57.1523	-2.51587571
	22	-2	31	31.8545	-2.52551508
	23	-2	32	6.5557	-2.53515445
	24	-2	32	41.2578	-2.54479382
102	25	-2	33	15.9600	-2.55443319
	26	-2	33	50.6611	-2.56407256
	27	-2	34	25.3633	-2.57371193
	28	-2	35	0.0645	-2.58335130
	29	-2	35	34.7666	-2.59299067
102	30	-2	36	9.4678	-2.60263004
	31	-2	36	44.1699	-2.61226941
	32	-2	37	18.8721	-2.62190879
	33	-2	37	53.5732	-2.63154816
	34	-2	38	28.2754	-2.64118753
102	35	-2	39	2.9766	-2.65082690
	36	-2	39	37.6787	-2.66046627
	37	-2	40	12.3799	-2.67010564
	38	-2	40	47.0820	-2.67974501
	39	-2	41	21.7842	-2.68938438
102	40	-2	41	56.4854	-2.69902375
	41	-2	42	31.1875	-2.70866312
	42	-2	43	5.8887	-2.71830249
	43	-2	43	40.5908	-2.72794186
	44	-2	44	15.2920	-2.73758123

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

LONGITUDE DEG	LONGITUDE MIN	THETA DEG	THETA MIN	THETA SECONDS	FRACTIONAL DEGREES
102	45	-2	44	49.9941	-2.74722060
	46	-2	45	24.6963	-2.75685997
	47	-2	45	59.3975	-2.76649934
	48	-2	46	34.0996	-2.77613871
	49	-2	47	8.8008	-2.78577808
102	50	-2	47	43.5029	-2.79541746
	51	-2	48	18.2041	-2.80505683
	52	-2	48	52.9063	-2.81469620
	53	-2	49	27.6084	-2.82433557
	54	-2	50	2.3096	-2.83397494
102	55	-2	50	37.0117	-2.84361431
	56	-2	51	11.7129	-2.85325368
	57	-2	51	46.4150	-2.86289305
	58	-2	52	21.1172	-2.87253242
	59	-2	52	55.8184	-2.88217179
103	0	-2	53	30.5205	-2.89181116
	1	-2	54	5.2217	-2.90145053
	2	-2	54	39.9238	-2.91108990
	3	-2	55	14.6250	-2.92072927
	4	-2	55	49.3271	-2.93036864
103	5	-2	56	24.0293	-2.94000801
	6	-2	56	58.7305	-2.94964738
	7	-2	57	33.4326	-2.95928675
	8	-2	58	8.1338	-2.96892612
	9	-2	58	42.8359	-2.97856550
103	10	-2	59	17.5371	-2.98820487
	11	-2	59	52.2393	-2.99784424
	12	-3	0	26.9414	-3.00748361
	13	-3	1	1.6426	-3.01712298
	14	-3	1	36.3447	-3.02676235
103	15	-3	2	11.0459	-3.03640172
	16	-3	2	45.7480	-3.04604109
	17	-3	3	20.4492	-3.05568046
	18	-3	3	55.1514	-3.06531983
	19	-3	4	29.8535	-3.07495920

(Continued)

TABLE B-2. LAMBERT PROJECTION FOR OKLAHOMA
STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS

(Concluded)

LONGITUDE		THETA			FRACTIONAL
DEG	MIN	DEG	MIN	SECONDS	DEGREES
103	20	-3	5	4.5547	-3.08459857
	21	-3	5	39.2568	-3.09423794
	22	-3	6	13.9589	-3.10387731
	23	-3	6	48.6602	-3.11351668
	24	-3	7	23.3613	-3.12315605
103	25	-3	7	58.0635	-3.13279542
	26	-3	8	32.7656	-3.14243479
	27	-3	9	7.4668	-3.15207416
	28	-3	9	42.1689	-3.16171354
	29	-3	10	16.8701	-3.17135291
103	30	-3	10	51.5723	-3.18099228
	31	-3	11	26.2744	-3.19063165
	32	-3	12	0.9756	-3.20027102
	33	-3	12	35.6777	-3.20991039
	34	-3	13	10.3789	-3.21954976
103	35	-3	13	45.0811	-3.22918913
	36	-3	14	19.7822	-3.23882850
	37	-3	14	54.4844	-3.24846787
	38	-3	15	29.1865	-3.25810724
	39	-3	16	3.8877	-3.26774661
103	40	-3	16	38.5898	-3.27738598
	41	-3	17	13.2910	-3.28702535
	42	-3	17	47.9932	-3.29666472
	43	-3	18	22.6943	-3.30630409
	44	-3	18	57.3965	-3.31594346
103	45	-3	19	32.0986	-3.32558283
	46	-3	20	6.7998	-3.33522221
	47	-3	20	41.5020	-3.34486158
	48	-3	21	16.2031	-3.35450095
	49	-3	21	50.9053	-3.36414032
103	50	-3	22	25.6064	-3.37377969
	51	-3	23	0.3086	-3.38341906
	52	-3	23	35.0107	-3.39305843
	53	-3	24	9.7119	-3.40269780
	54	-3	24	44.4141	-3.41233717
	55	-3	25	19.1152	-3.42197654
	56	-3	25	53.8174	-3.43161591
	57	-3	26	28.5186	-3.44125528
	58	-3	27	3.2207	-3.45089465
	59	-3	27	37.9229	-3.46053402
104	0	-3	28	12.6240	-3.47017339

APPENDIX C

LAMBERT PROJECTION FOR OKLAHOMA

C-1. North
C-2. South

Lambert Projection for Oklahoma (North)

Table I

Lat.	R (feet)	Y' y value on central meridian feet	Tabular difference for 1 sec. of lat. feet	Scale in units of 7th place of logs.	Scale expressed as a ratio
35° 00'	29,082,831.70	0	101.11717	+655.8	1.0001510
01	29,076,764.67	6,067.03	101.11700	+630.6	1.0001452
02	29,070,697.65	12,134.05	101.11667	+605.7	1.0001395
03	29,064,630.65	18,201.05	101.11633	+581.2	1.0001338
04	29,058,563.67	24,268.03	101.11617	+557.0	1.0001283
05	29,052,496.70	30,335.00	101.11583	+533.2	1.0001228
35° 06'	29,046,429.75	36,401.95	101.11550	+509.8	1.0001174
07	29,040,362.82	42,468.88	101.11533	+486.7	1.0001121
08	29,034,295.90	48,535.80	101.11500	+464.0	1.0001068
09	29,028,229.00	54,602.70	101.11483	+441.6	1.0001017
10	29,022,162.11	60,669.59	101.11467	+419.6	1.0000966
35° 11'	29,016,095.23	66,736.47	101.11433	+397.9	1.0000916
12	29,010,028.37	72,803.33	101.11417	+376.6	1.0000867
13	29,003,961.52	78,870.18	101.11400	+355.7	1.0000819
14	28,997,894.68	84,937.02	101.11367	+335.2	1.0000772
15	28,991,827.86	91,003.84	101.11367	+315.0	1.0000725
35° 16'	28,985,761.04	97,070.66	101.11333	+295.1	1.0000679
17	28,979,694.24	103,137.46	101.11333	+275.6	1.0000635
18	28,973,627.44	109,204.26	101.11300	+256.5	1.0000591
19	28,967,560.66	115,271.04	101.11300	+237.8	1.0000548
20	28,961,493.88	121,337.82	101.11283	+219.4	1.0000505
35° 21'	28,955,427.11	127,404.59	101.11267	+201.4	1.0000464
22	28,949,360.35	133,471.35	101.11250	+183.7	1.0000423
23	28,943,293.60	139,538.10	101.11233	+166.4	1.0000383
24	28,937,226.86	145,604.84	101.11233	+149.4	1.0000344
25	28,931,160.12	151,671.58	101.11233	+132.8	1.0000306
35° 26'	28,925,093.38	157,738.32	101.11217	+116.6	1.0000268
27	28,919,026.65	163,805.05	101.11200	+100.8	1.0000232
28	28,912,959.93	169,871.77	101.11200	+85.3	1.0000196
29	28,906,893.21	175,938.49	101.11183	+70.2	1.0000162
30	28,900,826.50	182,005.20	101.11183	+55.4	1.0000128
35° 31'	28,894,759.79	188,071.91	101.11183	+41.0	1.0000094
32	28,888,693.08	194,138.62	101.11183	+27.0	1.0000062
33	28,882,626.37	200,205.33	101.11167	+13.3	1.0000031
34	28,876,559.67	206,272.03	101.11167	0.0	1.0000000
35	28,870,492.97	212,338.73	101.11167	-13.0	0.9999970

Lambert Projection for Oklahoma (North)

Table I (Cont'd)

Lat.	R (feet)	Y' y value on central meridian feet	Tabular difference for 1 sec. of lat. feet	Scale in units of 7th place of logs	Scale expressed as a ratio
35° 36'	28,864,426.27	218,405.43	101.11183	-25.6	0.9999941
37	28,858,359.56	224,472.14	101.11167	-37.8	0.9999913
38	28,852,292.86	230,538.84	101.11167	-49.7	0.9999886
39	28,846,226.16	236,605.54	101.11167	-61.2	0.9999859
40	28,840,159.46	242,672.24	101.11183	-72.3	0.9999834
35° 41	28,834,092.75	248,738.95	101.11183	-83.1	0.9999809
42	28,828,026.04	254,805.66	101.11183	-93.5	0.9999785
43	28,821,959.33	260,872.37	101.11183	-103.5	0.9999762
44	28,815,892.62	266,939.08	101.11200	-113.2	0.9999739
45	28,809,825.90	273,005.80	101.11200	-122.5	0.9999718
35° 46'	28,803,759.18	279,072.52	101.11200	-131.5	0.9999697
47	28,797,692.46	285,139.24	101.11217	-140.1	0.9999677
48	28,791,625.73	291,205.97	101.11233	-148.3	0.9999658
49	28,785,558.99	297,272.71	101.11250	-156.2	0.9999640
50	28,779,492.24	303,339.46	101.11250	-163.7	0.9999623
35° 51'	28,773,425.49	309,406.21	101.11250	-170.8	0.9999607
52	28,767,358.74	315,472.96	101.11283	-177.6	0.9999591
53	28,761,291.97	321,539.73	101.11283	-184.0	0.9999576
54	28,755,225.20	327,606.50	101.11317	-190.1	0.9999562
55	28,749,158.41	333,673.29	101.11317	-195.8	0.9999549
35° 56'	28,743,091.62	339,740.08	101.11333	-201.1	0.9999537
57	28,737,024.82	345,806.88	101.11350	-206.0	0.9999526
58	28,730,958.01	351,873.69	101.11383	-210.6	0.9999515
59	28,724,891.18	357,940.52	101.11383	-214.8	0.9999505
36° 00'	28,718,824.35	364,007.35	101.11417	-218.7	0.9999496
36° 01'	28,712,757.50	370,074.20	101.11433	-222.2	0.9999488
02	28,706,690.64	376,141.06	101.11450	-225.3	0.9999481
03	28,700,623.77	382,207.93	101.11483	-228.1	0.9999475
04	28,694,556.88	388,274.82	101.11500	-230.5	0.9999469
05	28,688,489.98	394,341.72	101.11517	-232.5	0.9999465
36° 06'	28,682,423.07	400,408.63	101.11550	-234.1	0.9999461
07	28,676,356.14	406,475.56	101.11567	-235.4	0.9999458
08	28,670,289.20	412,542.50	101.11600	-236.3	0.9999456
09	28,664,222.24	418,609.46	101.11633	-236.9	0.9999455
10	28,658,155.26	424,676.44	101.11667	-237.1	0.9999454

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Lambert Projection for Oklahoma (North)

Table I (Cont'd)

Lat.	R (feet)	y' y value on central meridian feet	Tabular difference for 1 sec. of lat. feet	Scale in units of 7th place of logs	Scale expressed as a ratio
36° 11'	28,652,088.26	430,743.44	101.11683	-236.9	0.9999455
12	28,646,021.25	436,810.45	101.11717	-236.4	0.9999456
13	28,639,954.22	442,877.48	101.11750	-235.5	0.9999458
14	28,633,887.17	448,944.53	101.11783	-234.2	0.9999461
15	28,627,820.10	455,011.60	101.11800	-232.6	0.9999464
36° 16'	28,621,753.02	461,078.68	101.11850	-230.6	0.9999469
17	28,615,685.91	467,145.79	101.11883	-228.2	0.9999475
18	28,609,618.78	473,212.92	101.11917	-225.5	0.9999481
19	28,603,551.63	479,280.07	101.11950	-222.4	0.9999488
20	28,597,484.46	485,347.24	101.12000	-218.9	0.9999496
36° 21'	28,591,417.26	491,414.44	101.12017	-215.1	0.9999505
22	28,585,350.05	497,481.65	101.12067	-210.9	0.9999514
23	28,579,282.81	503,548.89	101.12117	-206.3	0.9999525
24	28,573,215.54	509,616.16	101.12150	-201.4	0.9999536
25	28,567,148.25	515,683.45	101.12183	-196.1	0.9999548
36° 26'	28,561,080.94	521,750.76	101.12233	-190.4	0.9999562
27	28,555,013.60	527,818.10	101.12267	-184.4	0.9999576
28	28,548,946.24	533,885.46	101.12317	-178.0	0.9999590
29	28,542,878.85	539,952.85	101.12367	-171.2	0.9999606
30	28,536,811.43	546,020.27	101.12400	-164.1	0.9999622
36° 31'	28,530,743.99	552,087.71	101.12450	-156.6	0.9999639
32	28,524,676.52	558,155.18	101.12500	-148.7	0.9999658
33	28,518,609.02	564,222.68	101.12550	-140.5	0.9999677
34	28,512,541.49	570,290.21	101.12600	-131.9	0.9999696
35	28,506,473.93	576,357.77	101.12650	-123.0	0.9999717
36° 36'	28,500,406.34	582,425.36	101.12700	-113.6	0.9999738
37	28,494,338.72	588,492.98	101.12750	-103.9	0.9999761
38	28,488,271.07	594,560.63	101.12800	-93.8	0.9999784
39	28,482,203.39	600,628.31	101.12867	-83.4	0.9999808
40	28,476,135.67	606.696.03	101.12917	-72.6	0.9999833
36° 41'	28,470,067.92	612,763.78	101.12967	-61.4	0.9999859
42	28,464,000.14	618,831.56	101.13017	-49.9	0.9999885
43	28,457,932.33	624,899.37	101.13083	-38.0	0.9999913
44	28,451,864.48	630,967.22	101.13133	-25.7	0.9999941
45	28,445,796.60	637,035.10	101.13200	-13.0	0.9999970

Lambert Projection for Oklahoma (North)

Table I (Cont'd)

Lat.	R feet	Y' y value on central meridian feet	Tabular difference for 1 sec. of lat. feet	Scale in units of 7th place of logs	Scale expressed as a ratio
36° 46'	28,439,728.68	643,103.02	101.13250	0.0	1.0000000
47	28,433.660.73	649,170.97	101.13317	+13.4	1.0000031
48	28,427,592.74	655,238.96	101.13383	+27.2	1.0000063
49	28,421,524.71	661,306.99	101.13433	+41.3	1.0000095
50	28,415,456.65	667,375.05	101.13500	+55.8	1.0000128
36° 51'	28,409,388.55	673,443.15	101.13567	+70.7	1.0000163
52	28,403,320.41	679,511.29	101.13633	+85.9	1.0000198
53	28,397,252.23	685,579.47	101.13700	+101.5	1.0000234
54	28,391,184.01	691,647.69	101.13750	+117.5	1.0000271
55	28,385,115.76	697,715.94	101.13833	+133.8	1.0000308
36° 56'	28,379,047.46	703,784.24	101.13900	+150.5	1.0000347
57	28,372,979.12	709,852.58	101.13967	+167.6	1.0000386
58	28,366,910.74	715,920.96	101.14033	+185.1	1.0000426
59	28,360,842.32	721,989.38	101.14117	+202.9	1.0000467
37° 00'	28,354,773.85	728,057.85	101.14167	+221.1	1.0000509
37° 01'	28,348,705.35	734,126.35	101.14250	+239.7	1.0000552
02	28,342.636.80	740,194.90	101.14333	+258.6	1.0000595
03	28,336,568.20	746,263.50	101.14400	+277.9	1.0000640
04	28,330,499.56	752,332.14	101.14467	+297.6	1.0000685
05	28,324,430.88	758,400.82	101.14550	+317.6	1.0000731
37° 06'	28,318,362.15	764,469.55	101.14633	+338.0	1.0000778
07	28,312,293.37	770,538.33	101.14700	+358.8	1.0000826
08	28,306,224.55	776,607.15	101.14783	+380.0	1.0000875
09	28,300,155.68	782,676.02	101.14867	+401.5	1.0000924
10	28,294,086.76	788,744.94	101.14933	+423.4	1.0000975
37° 11'	28,288,017.80	794,813.90	101.15033	+445.7	1.0001026
12	28,281,948.78	800,882.92	101.15100	+468.3	1.0001078
13	28,275,879.72	806,951.98	101.15183	+491.3	1.0001131
14	28,269,810.61	813,021.09	101.15283	+514.7	1.0001185
15	28,263,741.44	819,090.26	101.15350	+538.4	1.0001240
37° 16'	28,257,672.23	825,159.47	101.15433	+562.5	1.0001295
17	28,251,602.97	831,228.73	101.15533	+587.0	1.0001352
18	28,245.533.65	837,298.05	101.15617	+611.9	1.0001409
19	28,239,464.28	843,367.42	101.15700	+637.1	1.0001467
20	28,233,394.86	849,436.84		+662.7	1.0001526

Lambert Projection for Oklahoma (North)

Table II

1° of Long. = 0°59014707 of θ

Long.	θ	Long.	θ	Long.	θ
94° 10'	+2° 15' 44°0296				
11	+2 15 08.6208	94° 46'	+1° 54' 29°3120	95° 21'	+1° 33' 50°0031
12	+2 14 33.2120	47	+1 53 53.9031	22	+1 33 14.5943
13	+2 13 57.8032	48	+1 53 18.4943	23	+1 32 39.1854
14	+2 13 22.3943	49	+1 52 43.0855	24	+1 32 03.7766
15	+2 12 46.9855	50	+1 52 07.6767	25	+1 31 28.3678
94° 16'	+2 12 11.5767	94° 51'	+1 51 32.2678	95° 26'	+1 30 52.9590
17	+2 11 36.1679	52	+1 50 56.8590	27	+1 30 17.5501
18	+2 11 00.7590	53	+1 50 21.4502	28	+1 29 42.1413
19	+2 10 25.3502	54	+1 49 46.0414	29	+1 29 06.7325
20	+2 09 49.9414	55	+1 49 10.6325	30	+1 28 31.3237
94° 21'	+2 09 14.5326	94° 56'	+1 48 35.2237	95° 31'	+1 27 55.9149
22	+2 08 39.1237	57	+1 47 59.8149	32	+1 27 20.5060
23	+2 08 03.7149	58	+1 47 24.4061	33	+1 26 45.0972
24	+2 07 28.3061	59	+1 46 48.9972	34	+1 26 09.6884
25	+2 06 52.8973	95° 00'	+1 46 13.5884	35	+1 25 34.2796
94° 26'	+2 06 17.4884	95° 01'	+1 45 38.1796	95° 36'	+1 24 58.8707
27	+2 05 42.0796	02	+1 45 02.7708	37	+1 24 23.4619
28	+2 05 06.6708	03	+1 44 27.3619	38	+1 23 48.0531
29	+2 04 31.2620	04	+1 43 51.9531	39	+1 23 12.6443
30	+2 03 55.8531	05	+1 43 16.5443	40	+1 22 37.2354
94° 31'	+2 03 20.4443	95° 06'	+1 42 41.1355	95° 41'	+1 22 01.8266
32	+2 02 45.0355	07	+1 42 05.7266	42	+1 21 26.4178
33	+2 02 09.6267	08	+1 41 30.3178	43	+1 20 51.0090
34	+2 01 34.2178	09	+1 40 54.9090	44	+1 20 15.6001
35	+2 00 58.8090	10	+1 40 19.5002	45	+1 19 40.1913
94° 36'	+2 00 23.4002	95° 11'	+1 39 44.0913	95° 46'	+1 19 04.7825
37	+1 59 47.9914	12	+1 39 08.6825	47	+1 18 29.3737
38	+1 59 12.5825	13	+1 38 33.2737	48	+1 17 53.9648
39	+1 58 37.1737	14	+1 37 57.8649	49	+1 17 18.5560
40	+1 53 01.7649	15	+1 37 22.4560	50	+1 16 43.1472
94° 41'	+1 57 26.3561	95° 16'	+1 36 47.0472	95° 51'	+1 16 07.7384
42	+1 56 50.9473	17	+1 36 11.6384	52	+1 15 32.3295
43	+1 56 15.5384	18	+1 35 36.2296	53	+1 14 56.9207
44	+1 55 40.1296	19	+1 35 00.8207	54	+1 14 21.5119
45	+1 55 04.7208	20	+1 34 25.4119	55	+1 13 46.1031

Lambert Projection for Oklahoma (North)

Table II (Cont'd)

1" of Long. = 0".59014707 of θ

Long.	θ	Long.	θ	Long.	θ
95° 56'	+1° 13' 10".6942	96° 31'	+0° 52' 31".3854	97° 06'	+0° 31' 52".0765
57	+1 12 35.2854	32	+0 51 55.9766	07	+0 31 16.6677
58	+1 11 59.8766	33	+0 51 20.5677	08	+0 30 41.2589
59	+1 11 24.4678	34	+0 50 45.1589	09	+0 30 05.8500
96° 00'	+1 10 49.0589	35	+0 50 09.7501	10	+0 29 30.4412
96° 01'	+1 10 13.6501	96° 36'	+0 49 34.3413	97° 11'	+0 28 55.0324
02	+1 09 38.2413	37	+0 48 58.9324	12	+0 28 19.6236
03	+1 09 02.8325	38	+0 48 23.5236	13	+0 27 44.2148
04	+1 08 27.4236	39	+0 47 48.1148	14	+0 27 08.8059
05	+1 07 52.0148	40	+0 47 12.7060	15	+0 26 33.3971
96° 06'	+1 07 16.6060	96° 41'	+0 46 37.2971	97° 16'	+0 25 57.9883
07	+1 06 41.1972	42	+0 46 01.8883	17	+0 25 22.5795
08	+1 06 05.7883	43	+0 45 26.4795	18	+0 24 47.1706
09	+1 05 30.3795	44	+0 44 51.0707	19	+0 24 11.7618
10	+1 04 54.9707	45	+0 44 15.6618	20	+0 23 36.3530
96° 11'	+1 04 19.5619	96° 46'	+0 43 40.2530	97° 21'	+0 23 00.9442
12	+1 03 44.1530	47	+0 43 04.8442	22	+0 22 25.5353
13	+1 03 08.7442	48	+0 42 29.4354	23	+0 21 50.1265
14	+1 02 33.3354	49	+0 41 54.0265	24	+0 21 14.7177
15	+1 01 57.9266	50	+0 41 18.6177	25	+0 20 39.3089
96° 16'	+1 01 22.5177	96° 51'	+0 40 43.2089	97° 26'	+0 20 03.9000
17	+1 00 47.1089	52	+0 40 07.8001	27	+0 19 28.4912
18	+1 00 11.7001	53	+0 39 32.3912	28	+0 18 53.0824
19	+0 59 36.2913	54	+0 38 56.9824	29	+0 18 17.6736
20	+0 59 00.8825	55	+0 38 21.5736	30	+0 17 42.2647
96° 21'	+0 58 25.4736	96° 56'	+0 37 46.1648	97° 31'	+0 17 06.8559
22	+0 57 50.0648	57	+0 37 10.7559	32	+0 16 31.4471
23	+0 57 14.6560	58	+0 36 35.3471	33	+0 15 56.0383
24	+0 56 39.2472	59	+0 35 59.9383	34	+0 15 20.6294
25	+0 56 03.8383	97° 00'	+0 35 24.5295	35	+0 14 45.2206
96° 26'	+0 55 28.4295	97° 01'	+0 34 49.1206	97° 36'	+0 14 09.8118
27	+0 54 53.0207	02	+0 34 13.7118	37	+0 13 34.4030
28	+0 54 17.6119	03	+0 33 38.3030	38	+0 12 58.9941
29	+0 53 42.2030	04	+0 33 02.8942	39	+0 12 23.5853
30	+0 53 06.7942	05	+0 32 27.4853	40	+0 11 48.1765

Lambert Projection for Oklahoma (North)

Table II (Cont'd)

1" of Long. = 0".59014707 of θ

Long.	θ	Long.	θ	Long.	θ
97° 41'	+0° 11' 12".7677	98° 16'	-0° 09' 26".5412	98° 51'	-0° 30' 05".8500
42	+0 10 37.3588	17	-0 10 01.9500	52	-0 30 41.2589
43	+0 10 01.9500	18	-0 10 37.3588	53	-0 31 16.6677
44	+0 09 26.5412	19	-0 11 12.7677	54	-0 31 52.0765
45	+0 08 51.1324	20	-0 11 48.1765	55	-0 32 27.4853
97° 46'	+0 08 15.7235	98° 21'	-0 12 23.5853	98° 56'	-0 33 02.8942
47	+0 07 40.3147	22	-0 12 58.9941	57	-0 33 38.3030
48	+0 07 04.9059	23	-0 13 34.4030	58	-0 34 13.7118
49	+0 06 29.4971	24	-0 14 09.8118	59	-0 34 49.1206
50	+0 05 54.0882	25	-0 14 45.2206	99° 00'	-0 35 24.5295
97° 51'	+0 05 18.6794	98° 26'	-0 15 20.6294	99° 01'	-0 35 59.9383
52	+0 04 43.2706	27	-0 15 56.0383	02	-0 36 35.3471
53	+0 04 07.8618	28	-0 16 31.4471	03	-0 37 10.7559
54	+0 03 32.4529	29	-0 17 06.8559	04	-0 37 46.1648
55	+0 02 57.0441	30	-0 17 42.2647	05	-0 38 21.5736
97° 56'	+0 02 21.6353	98° 31'	-0 18 17.6736	99° 06'	-0 38 56.9824
57	+0 01 46.2265	32	-0 18 53.0824	07	-0 39 32.3912
58	+0 01 10.8176	33	-0 19 28.4912	08	-0 40 07.8001
59	+0 00 35.4088	34	-0 20 03.9000	09	-0 40 43.2089
98° 00'	0 00 00.0000	35	-0 20 39.3089	10	-0 41 18.6177
98° 01'	-0 00 35.4088	98° 36'	-0 21 14.7177	99° 11'	-0 41 54.0265
02	-0 01 10.8176	37	-0 21 50.1265	12	-0 42 29.4354
03	-0 01 46.2265	38	-0 22 25.5353	13	-0 43 04.8442
04	-0 02 21.6353	39	-0 23 00.9442	14	-0 43 40.2530
05	-0 02 57.0441	40	-0 23 36.3530	15	-0 44 15.6618
98° 06'	-0 03 32.4529	98° 41'	-0 24 11.7618	99° 16'	-0 44 51.0707
07	-0 04 07.8618	42	-0 24 47.1706	17	-0 45 26.4795
08	-0 04 43.2706	43	-0 25 22.5795	18	-0 46 01.8883
09	-0 05 18.6794	44	-0 25 57.9883	19	-0 46 37.2971
10	-0 05 54.0882	45	-0 26 33.3971	20	-0 47 12.7060
98° 11'	-0 06 29.4971	98° 46'	-0 27 08.8059	99° 21'	-0 47 48.1148
12	-0 07 04.9059	47	-0 27 44.2148	22	-0 48 23.5236
13	-0 07 40.3147	48	-0 28 19.6236	23	-0 48 58.9324
14	-0 08 15.7235	49	-0 28 55.0324	24	-0 49 34.3413
15	-0 08 51.1324	50	-0 29 30.4412	25	-0 50 09.7501

Lambert Projection for Oklahoma (North)

Table II (Cont'd)

1" of Long. = 0.59014707 of θ

Long.	θ	Long.	θ	Long.	θ
99° 26'	-0° 50' 45.1589	100° 01'	-1° 11' 24.4678	100° 36'	-1° 32' 03.7766
27	-0 51 20.5677	02	-1 11 59.8766	37	-1 32 39.1854
28	-0 51 55.9766	03	-1 12 35.2854	38	-1 33 14.5943
29	-0 52 31.3854	04	-1 13 10.6942	39	-1 33 50.0031
30	-0 53 06.7942	05	-1 13 46.1031	40	-1 34 25.4119
99° 31'	-0 53 42.2030	100° 06'	-1 14 21.5119	100° 41'	-1 35 00.8207
32	-0 54 17.6119	07	-1 14 56.9207	42	-1 35 36.2296
33	-0 54 53.0207	08	-1 15 32.3295	43	-1 36 11.6384
34	-0 55 28.4295	09	-1 16 07.7384	44	-1 36 47.0472
35	-0 56 03.8383	10	-1 16 43.1472	45	-1 37 22.4560
99° 36'	-0 56 39.2472	100° 11'	-1 17 18.5560	100° 46'	-1 37 57.8649
37	-0 57 14.6560	12	-1 17 53.9648	47	-1 38 33.2737
38	-0 57 50.0648	13	-1 18 29.3737	48	-1 39 08.6825
39	-0 58 25.4736	14	-1 19 04.7825	49	-1 39 44.0913
40	-0 59 00.8825	15	-1 19 40.1913	50	-1 40 19.5002
99° 41'	-0 59 36.2913	100° 16'	-1 20 15.6001	100° 51'	-1 40 54.9090
42	-1 00 11.7001	17	-1 20 51.0090	52	-1 41 30.3178
43	-1 00 47.1089	18	-1 21 26.4178	53	-1 42 05.7266
44	-1 01 22.5177	19	-1 22 01.8266	54	-1 42 41.1355
45	-1 01 57.9266	20	-1 22 37.2354	55	-1 43 16.5443
99° 46'	-1 02 33.3354	100° 21'	-1 23 12.6443	100° 56'	-1 43 51.9531
47	-1 03 08.7442	22	-1 23 48.0531	57	-1 44 27.3619
48	-1 03 44.1530	23	-1 24 23.4619	58	-1 45 02.7708
49	-1 04 19.5619	24	-1 24 58.8707	59	-1 45 38.1796
50	-1 04 54.9707	25	-1 25 34.2796	101° 00'	-1 46 13.5884
99° 51'	-1 05 30.3795	100° 26'	-1 26 09.6884	101° 01'	-1 46 48.9972
52	-1 06 05.7883	27	-1 26 45.0972	02	-1 47 24.4061
53	-1 06 41.1972	28	-1 27 20.5060	03	-1 47 59.8149
54	-1 07 16.6060	29	-1 27 55.9149	04	-1 48 35.2237
55	-1 07 52.0148	30	-1 28 31.3237	05	-1 49 10.6325
99° 56'	-1 08 27.4236	100° 31'	-1 29 06.7325	101° 06'	-1 49 46.0414
57	-1 09 02.8325	32	-1 29 42.1413	07	-1 50 21.4502
58	-1 09 38.2413	33	-1 30 17.5501	08	-1 50 56.8590
59	-1 10 13.6501	34	-1 30 52.9590	09	-1 51 32.2678
100° 00'	-1 10 49.0589	35	-1 31 28.3678	10	-1 52 07.6767

Lambert Projection for Oklahoma (North)

Table II (Cont'd)

1" of Long. = 0".59014707 of θ

Long.	θ	Long.	θ	Long.	θ
101° 11'	-1° 52' 43".0855	101° 46'	-2° 13' 22".3943	102° 21'	-2° 34' 01".7032
12	-1 53 18.4943	47	-2 13 57.8032	22	-2 34 37.1120
13	-1 53 53.9031	48	-2 14 33.2120	23	-2 35 12.5208
14	-1 54 29.3120	49	-2 15 08.6208	24	-2 35 47.9297
15	-1 55 04.7208	50	-2 15 44.0296	25	-2 36 23.3385
101° 16'	-1 55 40.1296	101° 51'	-2 16 19.4385	102° 26'	-2 36 58.7473
17	-1 56 15.5384	52	-2 16 54.8473	27	-2 37 34.1561
18	-1 56 50.9473	53	-2 17 30.2561	28	-2 38 09.5650
19	-1 57 26.3561	54	-2 18 05.6649	29	-2 38 44.9738
20	-1 58 01.7649	55	-2 18 41.0738	30	-2 39 20.3826
101° 21'	-1 58 37.1737	101° 56'	-2 19 16.4826	102° 31'	-2 39 55.7914
22	-1 59 12.5825	57	-2 19 51.8914	32	-2 40 31.2003
23	-1 59 47.9914	58	-2 20 27.3002	33	-2 41 06.6091
24	-2 00 23.4002	59	-2 21 02.7091	34	-2 41 42.0179
25	-2 00 58.8090	102° 00'	-2 21 38.1179	35	-2 42 17.4267
101° 26'	-2 01 34.2178	102° 01'	-2 22 13.5267	102° 36'	-2 42 52.8356
27	-2 02 09.6267	02	-2 22 48.9355	37	-2 43 28.2444
28	-2 02 45.0355	03	-2 23 24.3444	38	-2 44 03.6532
29	-2 03 20.4443	04	-2 23 59.7532	39	-2 44 39.0620
30	-2 03 55.8531	05	-2 24 35.1620	40	-2 45 14.4709
101° 31'	-2 04 31.2620	102° 06'	-2 25 10.5708	102° 41'	-2 45 49.8797
32	-2 05 06.6708	07	-2 25 45.9797	42	-2 46 25.2885
33	-2 05 42.0796	08	-2 26 21.3885	43	-2 47 00.6973
34	-2 06 17.4884	09	-2 26 56.7973	44	-2 47 36.1062
35	-2 06 52.8973	10	-2 27 32.2061	45	-2 48 11.5150
101° 36'	-2 07 28.3061	102° 11'	-2 28 07.6149	102° 46'	-2 48 46.9238
37	-2 08 03.7149	12	-2 28 43.0238	47	-2 49 22.3326
38	-2 08 39.1237	13	-2 29 18.4326	48	-2 49 57.7415
39	-2 09 14.5326	14	-2 29 53.8414	49	-2 50 33.1503
40	-2 09 49.9414	15	-2 30 29.2502	50	-2 51 08.5591
101° 41'	-2 10 25.3502	102° 16'	-2 31 04.6591	102° 51'	-2 51 43.9679
42	-2 11 00.7590	17	-2 31 40.0679	52	-2 52 19.3768
43	-2 11 36.1679	18	-2 32 15.4767	53	-2 52 54.7856
44	-2 12 11.5767	19	-2 32 50.8855	54	-2 53 30.1944
45	-2 12 46.9855	20	-2 33 26.2944	55	-2 54 05.6032

Lambert Projection for Oklahoma (South)

Table I

Lat.	R feet	y' y value on central meridian feet	Tabular difference for 1 sec. of lat. feet	Scale in units of 7th place of logs	Scale expressed as a ratio
33° 20'	30,838,032.96	0	101.09150	+746.7	1.0001719
21	30,831,967.47	6,065.49	101.09117	+719.6	1.0001657
22	30,825,902.00	12,130.96	101.09083	+692.9	1.0001595
23	30,819,836.55	18,196.41	101.09050	+666.6	1.0001535
24	30,813,771.12	24,261.84	101.09017	+640.6	1.0001475
25	30,807,705.71	30,327.25	101.08983	+615.0	1.0001416
33° 26'	30,801,640.32	36,392.64	101.08950	+589.7	1.0001358
27	30,795,574.95	42,458.01	101.08933	+564.8	1.0001301
28	30,789,509.59	48,523.37	101.08900	+540.3	1.0001244
29	30,783,444.25	54,588.71	101.08867	+516.1	1.0001188
30	30,777,378.93	60,654.03	101.08833	+492.3	1.0001134
33° 31'	30,771,313.63	66,719.33	101.08817	+468.8	1.0001080
32	30,765,248.34	72,784.62	101.08783	+445.7	1.0001026
33	30,759,183.07	78,849.89	101.08767	+423.0	1.0000974
34	30,753,117.81	84,915.15	101.08733	+400.6	1.0000922
35	30,747,052.57	90,980.39	101.08717	+378.6	1.0000872
33° 36'	30,740,987.34	97,045.62	101.08683	+357.0	1.0000822
37	30,734,922.13	103,110.83	101.08683	+335.7	1.0000773
38	30,728,856.92	109,176.04	101.08650	+314.8	1.0000725
39	30,722,791.73	115,241.23	101.08617	+294.2	1.0000677
40	30,716,726.56	121,306.40	101.08617	+274.0	1.0000631
33° 41'	30,710,661.39	127,371.57	101.08600	+254.2	1.0000585
42	30,704,596.23	133,436.73	101.08567	+234.7	1.0000540
43	30,698,531.09	139,501.87	101.08567	+215.6	1.0000496
44	30,692,465.95	145,567.01	101.08533	+196.8	1.0000453
45	30,686,400.83	151,632.13	101.08533	+178.4	1.0000411
33° 46'	30,680,335.71	157,697.25	101.08517	+160.4	1.0000369
47	30,674,270.60	163,762.36	101.08500	+142.7	1.0000329
48	30,668,205.50	169,827.46	101.08500	+125.4	1.0000289
49	30,662,140.40	175,892.56	101.08467	+108.5	1.0000250
50	30,656,075.32	181,957.64	101.08467	+ 91.9	1.0000212
33° 51'	30,650,010.24	188,022.72	101.08467	+ 75.7	1.0000174
52	30,643,945.16	194,087.80	101.08450	+ 59.8	1.0000138
53	30,637,880.09	200,152.87	101.08433	+ 44.3	1.0000102
54	30,631,815.03	206,217.93	101.08433	+ 29.2	1.0000067
55	30,625,749.97	212,282.99	101.08433	+ 14.4	1.0000033

Lambert Projection for Oklahoma (South)

Table I (Cont'd)

Lat.	R feet	y' y value on central meridian feet	Tabular difference for 1 sec. of lat. feet	Scale in units of 7th place of logs	Scale expressed as a ratio
33° 56'	30,619,684.91	218,348.05	101.08433	0.0	1.0000000
57	30,613,619.85	224,413.11	101.08417	-14.0	0.9999968
58	30,607,554.80	230,478.16	101.08417	-27.7	0.9999936
59	30,601,489.75	236,543.21	101.08400	-41.0	0.9999906
34° 00'	30,595,424.71	242,608.25	101.08417	-54.0	0.9999876
34° 01'	30,589,359.66	248,673.30	101.08400	-66.6	0.9999847
02	30,583,294.62	254,738.34	101.08417	-78.8	0.9999819
03	30,577,229.57	260,803.39	101.08400	-90.7	0.9999791
04	30,571,164.53	266,868.43	101.08417	-102.2	0.9999765
05	30,565,099.48	272,933.48	101.08417	-113.3	0.9999739
34° 06'	30,559,034.43	278,998.53	101.08417	-124.1	0.9999714
07	30,552,969.38	285,063.58	101.08417	-134.5	0.9999690
08	30,546,904.33	291,128.63	101.08417	-144.6	0.9999667
09	30,540,839.28	297,193.68	101.08433	-154.3	0.9999645
10	30,534,774.22	303,258.74	101.08433	-163.6	0.9999623
34° 11'	30,528,709.16	309,323.80	101.08450	-172.6	0.9999603
12	30,522,644.09	315,388.87	101.08450	-181.2	0.9999583
13	30,516,579.02	321,453.94	101.08467	-189.4	0.9999564
14	30,510,513.94	327,519.02	101.08467	-197.3	0.9999546
15	30,504,448.86	333,584.10	101.08483	-204.8	0.9999528
34° 16	30,498,383.77	339,649.19	101.08500	-211.9	0.9999512
17	30,492,318.67	345,714.29	101.08500	-218.7	0.9999496
18	30,486,253.57	351,779.39	101.08517	-225.1	0.9999482
19	30,480,188.46	357,844.50	101.08533	-231.1	0.9999468
20	30,474,123.34	363,909.62	101.08550	-236.8	0.9999455
34° 21'	30,468,058.21	369,974.75	101.08567	-242.1	0.9999443
22	30,461,993.07	376,039.89	101.08583	-247.0	0.9999431
23	30,455,927.92	382,105.04	101.08600	-251.6	0.9999421
24	30,449,862.76	388,170.20	101.08617	-255.9	0.9999411
25	30,443.797.59	394,235.37	101.08633	-259.7	0.9999402
34° 26'	30,437.732.41	400,300.55	101.08667	-263.2	0.9999394
27	30,431,667.21	406.365.75	101.08683	-266.3	0.9999387
28	30,425,602.00	412,430.96	101.08700	-269.1	0.9999380
29	30,419,536.78	418,496.18	101.08717	-271.5	0.9999375
30	30,413,471.55	424,561.41	101.08750	-273.5	0.9999370

Lambert Projection for Oklahoma (South)

Table I (Cont'd)

Lat.	R feet	Y' y value on central meridian feet	Tabular difference for 1 sec. of lat. feet	Scale in units of 7th place of logs	Scale expressed as a ratio
34° 31'	30,407,406.30	430,626.66	101.08767	-275.2	0.9999366
32	30,401,341.04	436,691.92	101.08800	-276.5	0.9999363
33	30,395,275.76	442,757.20	101.08817	-277.4	0.9999361
34	30,389,210.47	448,822.49	101.08850	-278.0	0.9999360
35	30,383,145.16	454,887.80	101.08883	-278.2	0.9999359
34° 36'	30,377,079.83	460,953.13	101.08900	-278.0	0.9999360
37	30,371,014.49	467,018.47	101.08933	-277.5	0.9999361
38	30,364,949.13	473,083.83	101.08967	-276.6	0.9999363
39	30,358,883.75	479,149.21	101.09000	-275.3	0.9999366
40	30,352,818.35	485,214.61	101.09033	-273.7	0.9999370
34° 41'	30,346,752.93	491,280.03	101.09067	-271.7	0.9999374
42	30,340,687.49	497,345.47	101.09100	-269.3	0.9999380
43	30,334,622.03	503,410.93	101.09133	-266.6	0.9999386
44	30,328,556.55	509,476.41	101.09167	-263.5	0.9999393
45	30,322,491.05	515,541.91	101.09200	-260.1	0.9999401
34° 46'	30,316,425.53	521,607.43	101.09250	-256.3	0.9999410
47	30,310,359.98	527,672.98	101.09267	-252.1	0.9999420
48	30,304,294.42	533,738.54	101.09317	-247.5	0.9999430
49	30,298,228.83	539,804.13	101.09367	-242.6	0.9999441
50	30,292,163.21	545,869.75	101.09400	-237.3	0.9999454
34° 51'	30,286,097.57	551,935.39	101.09450	-231.6	0.9999467
52	30,280,031.90	558,001.06	101.09483	-225.6	0.9999481
53	30,273,966.21	564,066.75	101.09517	-219.2	0.9999495
54	30,267,900.50	570,132.46	101.09567	-212.5	0.9999511
55	30,261,834.76	576,198.20	101.09617	-205.4	0.9999527
34° 56'	30,255,768.99	582,263.97	101.09667	-197.9	0.9999544
57	30,249,703.19	588,329.77	101.09717	-190.0	0.9999562
58	30,243,637.36	594,395.60	101.09750	-181.8	0.9999581
59	30,237,571.51	600,461.45	101.09817	-173.2	0.9999601
35° 00'	30,231,505.62	606,527.34	101.09850	-164.2	0.9999622
35° 01'	30,225,439.71	612,593.25	101.09900	-154.9	0.9999643
02	30,219,373.77	618,659.19	101.09950	-145.2	0.9999666
03	30,213,307.80	624,725.16	101.10017	-135.1	0.9999689
04	30,207,241.79	630,791.17	101.10067	-124.7	0.9999713
05	30,201,175.75	636,857.21	101.10117	-113.9	0.9999738

Lambert Projection for Oklahoma (South)

Table I (Cont'd)

Lat.	R feet	Y' y value on central meridian feet	Tabular difference for 1 sec. of lat. feet	Scale in units of 7th place of logs	Scale expressed as a ratio
35° 06'	30,195,109.68	642,923.28	101.10167	-102.7	0.9999764
07	30,189,043.58	648,989.38	101.10217	-91.1	0.9999790
08	30,182,977.45	655,055.51	101.10283	-79.2	0.9999818
09	30,176,911.28	661,121.68	101.10333	-66.9	0.9999846
10	30,170,845.08	667,187.88	101.10400	-54.3	0.9999875
35° 11'	30,164,778.84	673,254.12	101.10467	-41.3	0.9999905
12	30,158,712.56	679,320.40	101.10517	-27.9	0.9999936
13	30,152,646.25	685,386.71	101.10567	-14.1	0.9999968
14	30,146,579.91	691,453.05	101.10633	0.0	1.0000000
15	30,140,513.53	697,519.43	101.10700	+14.5	1.0000033
35° 16'	30,134,447.11	703,585.85	101.10767	+29.4	1.0000068
17	30,128,380.65	709,652.31	101.10833	+44.6	1.0000103
18	30,122,314.15	715,718.81	101.10900	+60.2	1.0000139
19	30,116,247.61	721,785.35	101.10950	+76.2	1.0000175
20	30,110,181.04	727,851.92	101.11017	+92.5	1.0000213
35° 21'	30,104,114.43	733,918.53	101.11100	+109.2	1.0000251
22	30,098,047.77	739,985.19	101.11150	+126.3	1.0000291
23	30,091,981.08	746,051.88	101.11233	+143.7	1.0000331
24	30,085,914.34	752,118.62	101.11300	+161.5	1.0000372
25	30,079,847.56	758,185.40	101.11383	+179.7	1.0000414
35° 26'	30,073,780.73	764,252.23	101.11433	+198.3	1.0000457
27	30,067,713.87	770,319.09	101.11517	+217.2	1.0000500
28	30,061,646.96	776,386.00	101.11583	+236.5	1.0000545
29	30,055,580.01	782,452.95	101.11667	+256.2	1.0000590
30	30,049,513.01	788,519.95	101.11750	+276.2	1.0000636
35° 31'	30,043,445.96	794,587.00	101.11817	+296.6	1.0000683
32	30,037,378.87	800,654.09	101.11883	+317.4	1.0000731
33	30,031,311.74	806,721.22	101.11967	+338.5	1.0000779
34	30,025,244.56	812,788.40	101.12050	+360.0	1.0000829
35	30,019,177.33	818,855.63	101.12133	+381.9	1.0000879
35° 36'	30,013,110.05	824,922.91	101.12217	+404.1	1.0000930
37	30,007,042.72	830,990.24	101.12283	+426.7	1.0000982
38	30,000,975.35	837,057.61	101.12383	+449.7	1.0001035
39	29,994,907.92	843,125.04	101.12450	+473.1	1.0001089
40	29,988,840.45	849,192.51		+496.8	1.0001144

Lambert Projection for Oklahoma (South)

Table II

1" of Long. = 0".56761668 of θ

Long.	θ	Long.	θ	Long.	θ
94° 10'	+2° 10' 33".1102				
11	+2 09 59.0532	94° 46'	+1° 50' 07".0582	95° 21'	+1° 30' 15".0631
12	+2 09 24.9962	47	+1 49 33.0012	22	+1 29 41.0061
13	+2 08 50.9392	48	+1 48 58.9442	23	+1 29 06.9491
14	+2 08 16.8822	49	+1 48 24.8872	24	+1 28 32.8921
15	+2 07 42.8252	50	+1 47 50.8302	25	+1 27 58.8351
94° 16'	+2 07 08.7682	94° 51'	+1 47 16.7732	95° 26'	+1 27 24.7781
17	+2 06 34.7112	52	+1 46 42.7162	27	+1 26 50.7211
18	+2 06 00.6542	53	+1 46 08.6592	28	+1 26 16.6641
19	+2 05 26.5972	54	+1 45 34.6022	29	+1 25 42.6071
20	+2 04 52.5402	55	+1 45 00.5452	30	+1 25 08.5501
94° 21'	+2 04 18.4832	94° 56'	+1 44 26.4882	95° 31'	+1 24 34.4931
22	+2 03 44.4262	57	+1 43 52.4312	32	+1 24 00.4361
23	+2 03 10.3692	58	+1 43 18.3742	33	+1 23 26.3791
24	+2 02 36.3122	59	+1 42 44.3172	34	+1 22 52.3221
25	+2 02 02.2552	95° 00'	+1 42 10.2602	35	+1 22 18.2651
94° 26'	+2 01 28.1982	95° 01'	+1 41 36.2032	95° 36'	+1 21 44.2081
27	+2 00 54.1412	02	+1 41 02.1462	37	+1 21 10.1511
28	+2 00 20.0842	03	+1 40 28.0892	38	+1 20 36.0941
29	+1 59 46.0272	04	+1 39 54.0322	39	+1 20 02.0371
30	+1 59 11.9702	05	+1 39 19.9752	40	+1 19 27.9801
94° 31'	+1 58 37.9132	95° 06'	+1 38 45.9182	95° 41'	+1 18 53.9231
32	+1 58 03.8562	07	+1 38 11.8612	42	+1 18 19.8661
33	+1 57 29.7992	08	+1 37 37.8042	43	+1 17 45.8091
34	+1 56 55.7422	09	+1 37 03.7472	44	+1 17 11.7521
35	+1 56 21.6852	10	+1 36 29.6902	45	+1 16 37.6951
94° 36'	+1 55 47.6282	95° 11'	+1 35 55.6332	95° 46'	+1 16 03.6381
37	+1 55 13.5712	12	+1 35 21.5762	47	+1 15 29.5811
38	+1 54 39.5142	13	+1 34 47.5192	48	+1 14 55.5241
39	+1 54 05.4572	14	+1 34 13.4621	49	+1 14 21.4671
40	+1 53 31.4002	15	+1 33 39.4051	50	+1 13 47.4101
94° 41'	+1 52 57.3432	95° 16'	+1 33 05.3481	95° 51'	+1 13 13.3531
42	+1 52 23.2862	17	+1 32 31.2911	52	+1 12 39.2961
43	+1 51 49.2292	18	+1 31 57.2341	53	+1 12 05.2391
44	+1 51 15.1722	19	+1 31 23.1771	54	+1 11 31.1821
45	+1 50 41.1152	20	+1 30 49.1201	55	+1 10 57.1251

Lambert Projection for Oklahoma (South)

Table II (Cont'd)

1" of Long. = 0".56761668 of θ

Long.	θ	Long.	θ	Long.	θ
95° 56'	+1° 10' 23".0681	96° 31'	+0° 50' 31".0731	97° 06'	+0° 30' 39".0780
57	+1 09 49.0111	32	+0 49 57.0161	07	+0 30 05.0210
58	+1 09 14.9541	33	+0 49 22.9591	08	+0 29 30.9640
59	+1 08 40.8971	34	+0 48 43.9021	09	+0 28 56.9070
96° 00'	+1 08 06.8401	35	+0 48 14.8451	10	+0 28 22.8500
96° 01'	+1 07 32.7831	96° 36'	+0 47 40.7881	97° 11'	+0 27 48.7930
02	+1 06 58.7261	37	+0 47 06.7311	12	+0 27 14.7360
03	+1 06 24.6691	38	+0 46 32.6741	13	+0 26 40.6790
04	+1 05 50.6121	39	+0 45 58.6171	14	+0 26 06.6220
05	+1 05 16.5551	40	+0 45 24.5601	15	+0 25 32.5650
96° 06'	+1 04 42.4981	96° 41'	+0 44 50.5031	97° 16'	+0 24 58.5080
07	+1 04 08.4411	42	+0 44 16.4461	17	+0 24 24.4510
08	+1 03 34.3841	43	+0 43 42.3891	18	+0 23 50.3940
09	+1 03 00.3271	44	+0 43 08.3321	19	+0 23 16.3370
10	+1 02 26.2701	45	+0 42 34.2751	20	+0 22 42.2800
96° 11'	+1 01 52.2131	96° 46'	+0 42 00.2181	97° 21'	+0 22 08.2230
12	+1 01 18.1561	47	+0 41 26.1611	22	+0 21 34.1660
13	+1 00 44.0991	48	+0 40 52.1041	23	+0 21 00.1090
14	+1 00 10.0421	49	+0 40 18.0471	24	+0 20 26.0520
15	+0 59 35.9851	50	+0 39 43.9901	25	+0 19 51.9950
96° 16'	+0 59 01.9281	96° 51'	+0 39 09.9331	97° 26'	+0 19 17.9380
17	+0 58 27.8711	52	+0 38 35.8761	27	+0 18 43.8810
18	+0 57 53.8141	53	+0 38 01.8191	28	+0 18 09.8240
19	+0 57 19.7571	54	+0 37 27.7621	29	+0 17 35.7670
20	+0 56 45.7001	55	+0 36 53.7051	30	+0 17 01.7100
96° 21'	+0 56 11.6431	96° 56'	+0 36 19.6481	97° 31'	+0 16 27.6530
22	+0 55 37.5861	57	+0 35 45.5911	32	+0 15 53.5960
23	+0 55 03.5291	58	+0 35 11.5341	33	+0 15 19.5390
24	+0 54 29.4721	59	+0 34 37.4771	34	+0 14 45.4820
25	+0 53 55.4151	97° 00'	+0 34 03.4201	35	+0 14 11.4250
96° 26'	+0 53 21.3581	97° 01'	+0 33 29.3631	97° 36'	+0 13 37.3680
27	+0 52 47.3011	02	+0 32 55.3061	37	+0 13 03.3110
28	+0 52 13.2441	03	+0 32 21.2491	38	+0 12 29.2540
29	+0 51 39.1871	04	+0 31 47.1921	39	+0 11 55.1970
30	+0 51 05.1301	05	+0 31 13.1350	40	+0 11 21.1400

Lambert Projection for Oklahoma (South)

Table II (Cont'd)

1° of Long. = 0°56761668 of θ

Long.	θ	Long.	θ	Long.	θ
97° 41'	+0° 10' 47°0830	98° 16'	-0° 09' 04°9120	98° 51'	-0° 28' 56°9070
42	+0 10 13.0260	17	-0 09 38.9690	52	-0 29 30.9640
43	+0 09 38.9690	18	-0 10 13.0260	53	-0 30 05.0210
44	+0 09 04.9120	19	-0 10 47.0830	54	-0 30 39.0780
45	+0 08 30.8550	20	-0 11 21.1400	55	-0 31 13.1350
97° 46'	+0 07 56.7980	98° 21'	-0 11 55.1970	98° 56'	-0 31 47.1921
47	+0 07 22.7410	22	-0 12 29.2540	57	-0 32 21.2491
48	+0 06 48.6840	23	-0 13 03.3110	58	-0 32 55.3061
49	+0 06 14.6270	24	-0 13 37.3680	59	-0 33 29.3631
50	+0 05 40.5700	25	-0 14 11.4250	99° 00'	-0 34 03.4201
97° 51'	+0 05 06.5130	98° 26'	-0 14 45.4820	99° 01'	-0 34 37.4771
52	+0 04 32.4560	27	-0 15 19.5390	02	-0 35 11.5341
53	+0 03 58.3990	28	-0 15 53.5960	03	-0 35 45.5911
54	+0 03 24.3420	29	-0 16 27.6530	04	-0 36 19.6481
55	+0 02 50.2850	30	-0 17 01.7100	05	-0 36 53.7051
97° 56'	+0 02 16.2280	98° 31'	-0 17 35.7670	99° 06'	-0 37 27.7621
57	+0 01 42.1710	32	-0 18 09.8240	07	-0 38 01.8191
58	+0 01 08.1140	33	-0 18 43.8810	08	-0 38 35.8761
59	+0 00 34.0570	34	-0 19 17.9380	09	-0 39 09.9331
98° 00'	0 00 00.0000	35	-0 19 51.9950	10	-0 39 43.9901
98° 01'	-0 00 34.0570	98° 36'	-0 20 26.0520	99° 11'	-0 40 18.0471
02	-0 01 08.1140	37	-0 21 00.1090	12	-0 40 52.1041
03	-0 01 42.1710	38	-0 21 34.1660	13	-0 41 26.1611
04	-0 02 16.2280	39	-0 22 08.2230	14	-0 42 00.2181
05	-0 02 50.2850	40	-0 22 42.2800	15	-0 42 34.2751
98° 06'	-0 03 24.3420	98° 41'	-0 23 16.3370	99° 16'	-0 43 08.3321
07	-0 03 58.3990	42	-0 23 50.3940	17	-0 43 42.3891
08	-0 04 32.4560	43	-0 24 24.4510	18	-0 44 16.4461
09	-0 05 06.5130	44	-0 24 58.5080	19	-0 44 50.5031
10	-0 05 40.5700	45	-0 25 32.5650	20	-0 45 24.5601
98° 11'	-0 06 14.6270	98° 46'	-0 26 06.6220	99° 21'	-0 45 58.6171
12	-0 06 48.6840	47	-0 26 40.6790	22	-0 46 32.6741
13	-0 07 22.7410	48	-0 27 14.7360	23	-0 47 06.7311
14	-0 07 56.7980	49	-0 27 48.7930	24	-0 47 40.7881
15	-0 08 30.8550	50	-0 28 22.8500	25	-0 48 14.8451

Lambert Projection for Oklahoma (South)

Table II (Cont'd)

1° of Long. = 0.56761668 of θ

Long.	θ	Long.	θ
99° 26'	-0° 48' 48.9021	100° 01'	-1° 08' 40.8971
27	-0 49 22.9591	02	-1 09 14.9541
28	-0 49 57.0161	03	-1 09 49.0111
29	-0 50 31.0731	04	-1 10 23.0681
30	-0 51 05.1301	05	-1 10 57.1251
99° 31'	-0 51 39.1871	100° 06'	-1 11 31.1821
32	-0 52 13.2441	07	-1 12 05.2391
33	-0 52 47.3011	08	-1 12 39.2961
34	-0 53 21.3581	09	-1 13 13.3531
35	-0 53 55.4151	10	-1 13 47.4101
99° 36'	-0 54 29.4721	100° 11'	-1 14 21.4671
37	-0 55 03.5291	12	-1 14 55.5241
38	-0 55 37.5861	13	-1 15 29.5811
39	-0 56 11.6431	14	-1 16 03.6381
40	-0 56 45.7001	15	-1 16 37.6951
99° 41'	-0 57 19.7571	100° 16'	-1 17 11.7521
42	-0 57 53.8141	17	-1 17 45.8091
43	-0 58 27.8711	18	-1 18 19.8661
44	-0 59 01.9281	19	-1 18 53.9231
45	-0 59 35.9851	20	-1 19 27.9801
99° 46'	-1 00 10.0421	100° 21'	-1 20 02.0371
47	-1 00 44.0991	22	-1 20 36.0941
48	-1 01 18.1561	23	-1 21 10.1511
49	-1 01 52.2131	24	-1 21 44.2081
50	-1 02 26.2701	25	-1 22 18.2651
99° 51'	-1 03 00.3271	100° 26'	-1 22 52.3221
52	-1 03 34.3841	27	-1 23 26.3791
53	-1 04 08.4411	28	-1 24 00.4361
54	-1 04 42.4981	29	-1 24 34.4931
55	-1 05 16.5551	30	-1 25 08.5501
99° 56'	-1 05 50.6121		
57	-1 06 24.6691		
58	-1 06 58.7261		
59	-1 07 32.7831		
100° 00'	-1 08 06.8401		

Lambert Projection for Oklahoma (North)

Table II (Cont'd)

1" of Long. = 0".59014707 of θ

Long.	θ
102° 56'	-2° 54' 41".0121
57	-2 55 16.4209
58	-2 55 51.8297
59	-2 56 27.2385
103° 00'	-2 57 02.6474
103° 01'	-2 57 38.0562
02	-2 58 13.4650
03	-2 58 48.8738
04	-2 49 24.2826
05	-2 59 59.6915
103° 06'	-3 00 35.1003
07	-3 01 10.5091
08	-3 01 45.9179
09	-3 02 21.3268
10	-3 02 56.7356
103° 11'	-3 03 32.1444
12	-3 04 07.5532
13	-3 04 42.9621
14	-3 05 18.3709
15	-3 05 53.7797
103° 16'	-3 06 29.1885
17	-3 07 04.5974
18	-3 07 40.0062
19	-3 08 15.4150
20	-3 08 50.8238

APPENDIX D

OCS-UTM CONVERSION CONSTANTS

[redacted]ARL[redacted]OCS[redacted] COS[redacted]IOX[redacted]STA[redacted] [redacted]PAG[redacted]

UTM ZONE: 15 LONGITUDES 94 DEGS 0 MINS TO 94 DEGS 15 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9999632	0.0513146	755222.4	-3702137.5	6.0	0.9974492	-0.0511802	-563812.6	3731181.2	6.2
37	45	0.9997861	0.0512366	754964.4	-3701361.8	6.1	0.9976321	-0.0511210	-563952.9	3731031.3	5.2
37	30	0.9996276	0.0511597	754705.8	-3700668.8	6.1	0.9977972	-0.0510613	-564077.9	3730894.0	5.2
37	15	0.9994969	0.0510829	754439.4	-3700086.3	6.3	0.9979360	-0.0509995	-564179.1	3730770.8	5.4
37	0	0.9993790	0.0510071	754172.4	-3699576.3	6.6	0.9980585	-0.0509367	-564266.3	3730656.5	5.5
36	45	0.9992792	0.0509337	753910.8	-3699135.7	6.8	0.9981650	-0.0508738	-564340.2	3730551.5	5.5
36	30	0.9992023	0.0508596	753639.4	-3698790.3	7.3	0.9982485	-0.0508091	-564393.6	3730456.0	6.2
36	15	0.9991406	0.0507881	753374.3	-3698508.0	7.1	0.9983163	-0.0507444	-564434.1	3730367.3	6.0
36	0	0.9991004	0.0507133	753089.4	-3698312.8	7.7	0.9983631	-0.0506751	-564455.1	3730282.5	6.5
35	45	0.9990798	0.0506420	752812.5	-3698196.5	7.6	0.9983904	-0.0506063	-564459.6	3730204.3	6.5
35	30	0.9990772	0.0505716	752534.1	-3698152.3	7.7	0.9983996	-0.0505375	-564448.8	3730131.2	7.0
35	15	0.9990929	0.0505015	752251.8	-3698179.2	8.1	0.9983911	-0.0504664	-564422.7	3730059.8	7.3
35	0	0.9991312	0.0504327	751967.3	-3698293.8	8.7	0.9983594	-0.0503953	-564376.3	3729992.2	7.8
34	45	0.9991875	0.0503654	751683.1	-3698476.3	8.7	0.9983103	-0.0503230	-564315.0	3729925.0	7.8
34	30	0.9992577	0.0502962	751398.4	-3698710.0	8.9	0.9982466	-0.0502475	-564241.4	3729855.3	8.0
34	15	0.9993512	0.0502288	751093.1	-3699030.2	9.2	0.9981604	-0.0501718	-564148.3	3729786.0	8.5
34	0	0.9994616	0.0501632	750800.0	-3699412.3	9.9	0.9980571	-0.0500963	-564040.8	3729715.3	9.0
33	45	0.9995896	0.0500958	750494.7	-3699855.8	9.7	0.9979358	-0.0500168	-563917.8	3729638.5	9.0
33	30	0.9997376	0.0500334	750202.3	-3700371.8	10.2	0.9977950	-0.0499408	-563778.2	3729562.0	9.5
33	15	0.9999028	0.0499680	749893.6	-3700946.0	10.1	0.9976365	-0.0498597	-563623.6	3729476.3	9.3

TABLE D. OCS-UTM CONVERSION CONSTANTS

UTM ZONE: 15 LONGITUDES 94 DEGS 15 MINS TO 94 DEGS 30 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9998935	0.0514673	755892.9	-3701902.5	6.0	0.9975026	-0.0513388	-563945.9	3731299.5	5.0
37	45	0.9997180	0.0513752	755571.7	-3701129.7	6.0	0.9976864	-0.0512657	-564076.0	3731137.7	5.1
37	30	0.9995636	0.0512829	755244.1	-3700449.5	6.1	0.9978480	-0.0511901	-564186.9	3730988.8	5.2
37	15	0.9994283	0.0511916	754915.6	-3699852.3	6.4	0.9979918	-0.0511141	-564283.3	3730851.5	5.3
37	0	0.9993086	0.0511013	754588.1	-3699323.3	6.7	0.9981192	-0.0510370	-564366.4	3730723.7	5.5
36	45	0.9992112	0.0510116	754257.4	-3698888.0	6.9	0.9982250	-0.0509585	-564431.4	3730606.5	6.0
36	30	0.9991333	0.0509225	753923.9	-3698534.5	7.3	0.9983107	-0.0508783	-564479.6	3730497.2	6.3
36	15	0.9990745	0.0508352	753592.6	-3698260.0	7.2	0.9983779	-0.0507982	-564512.8	3730396.3	6.5
36	0	0.9990334	0.0507477	753256.7	-3698057.8	7.8	0.9984268	-0.0507159	-564530.7	3730300.3	6.5
35	45	0.9990138	0.0506602	752915.1	-3697941.3	7.9	0.9984549	-0.0506312	-564530.9	3730208.8	6.8
35	30	0.9990122	0.0505720	752566.1	-3697895.5	8.0	0.9984650	-0.0505443	-564516.4	3730120.2	7.0
35	15	0.9990318	0.0504888	752231.3	-3697934.5	8.1	0.9984530	-0.0504601	-564484.3	3730039.0	7.3
35	0	0.9990647	0.0504036	751886.1	-3698023.7	9.1	0.9984289	-0.0503728	-564442.8	3729956.7	7.8
34	45	0.9991195	0.0503186	751535.8	-3698195.5	8.6	0.9983820	-0.0502832	-564381.9	3729874.8	7.8
34	30	0.9991926	0.0502355	751188.5	-3698436.5	9.2	0.9983176	-0.0501937	-564307.3	3729793.8	8.3
34	15	0.9992850	0.0501519	750834.2	-3698748.5	9.2	0.9982334	-0.0501019	-564216.3	3729710.8	8.3
34	0	0.9993985	0.0500708	750483.9	-3699138.0	9.8	0.9981282	-0.0500107	-564108.1	3729627.2	8.8
33	45	0.9995253	0.0499878	750124.0	-3699572.8	9.7	0.9980103	-0.0499158	-563990.4	3729537.8	9.0
33	30	0.9996755	0.0499080	749769.6	-3700092.0	10.2	0.9978690	-0.0498226	-563853.3	3729447.0	9.5
33	15	0.9998422	0.0498299	749417.4	-3700668.0	10.3	0.9977111	-0.0497284	-563702.9	3729350.5	9.5

TABLE [illegible], OCS [illegible] CONVERSION CONSTANTS PAGE [illegible]

UTM ZONE: 15 LONGITUDES 94 DEGS 30 MINS TO 94 DEGS 45 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9998150	0.0516235	756580.1	-3701628.5	5.9	0.9975653	-0.0515011	-564088.1	3731412.5	4.9
37	45	0.9996396	0.0515167	756193.3	-3700652.8	6.0	0.9977497	-0.0514140	-564207.9	3731239.8	5.1
37	30	0.9994827	0.0514086	755797.6	-3700158.5	6.0	0.9979162	-0.0513230	-564312.3	3731076.8	5.1
37	15	0.9993465	0.0513000	755395.3	-3699553.8	6.4	0.9980620	-0.0512303	-564400.0	3730925.5	5.5
37	0	0.9992302	0.0511936	754998.0	-3699034.8	6.6	0.9981874	-0.0511369	-564471.9	3730785.8	5.5
36	45	0.9991334	0.0510891	754604.1	-3698596.5	6.7	0.9982939	-0.0510435	-564529.5	3730656.5	6.0
36	30	0.9990552	0.0509858	754211.7	-3698240.5	6.7	0.9983817	-0.0509491	-564572.4	3730535.5	6.0
36	15	0.9989983	0.0508819	753812.1	-3697970.0	7.3	0.9984482	-0.0508523	-564598.1	3730421.5	6.3
36	0	0.9989575	0.0507780	753409.4	-3697764.8	7.7	0.9984992	-0.0507535	-564611.9	3730311.8	6.5
35	45	0.9989362	0.0506778	753017.4	-3697639.0	7.9	0.9985305	-0.0506564	-564611.1	3730210.3	7.0
35	30	0.9989336	0.0505742	752608.5	-3697586.5	8.1	0.9985425	-0.0505543	-564594.5	3730109.5	7.3
35	15	0.9989508	0.0504735	752206.6	-3697611.8	8.3	0.9985354	-0.0504528	-564563.3	3730013.3	7.3
35	0	0.9989879	0.0503741	751805.6	-3697713.8	8.7	0.9985078	-0.0503512	-564516.4	3729920.8	7.8
34	45	0.9990420	0.0502724	751392.9	-3697879.5	9.0	0.9984642	-0.0502449	-564457.0	3729825.2	8.0
34	30	0.9991156	0.0501744	750989.8	-3698119.3	9.3	0.9984004	-0.0501408	-564382.4	3729733.0	8.3
34	15	0.9992077	0.0500759	750581.4	-3698426.5	9.4	0.9983183	-0.0500341	-564293.6	3729638.0	8.3
34	0	0.9993195	0.0499760	750163.8	-3698805.0	9.3	0.9982165	-0.0499240	-564189.6	3729539.3	8.8
33	45	0.9994508	0.0498788	749752.0	-3699254.0	9.6	0.9980951	-0.0498152	-564070.8	3729439.5	9.0
33	30	0.9995974	0.0497845	749348.4	-3699756.5	9.8	0.9979582	-0.0497072	-563940.7	3729336.7	9.0
33	15	0.9997650	0.0496858	748923.8	-3700331.3	10.2	0.9978012	-0.0495930	-563795.1	3729224.8	9.5

TABLE B. UCS-UTM CONVERSION CONSTANTS
UTM ZONE: 15 LONGITUDES 94 DEGS 45 MINS TO 95 DEGS 0 MINS

LATITUDE		UTM TO UCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9997239	0.0517755	757252.6	-3701296.5	5.7	0.9976401	-0.0516615	-564238.7	3731514.7	5.1
37	45	0.9995483	0.0516543	756801.9	-3700517.5	6.0	0.9978265	-0.0515600	-564348.9	3731330.3	5.1
37	30	0.9993941	0.0515311	756338.9	-3699832.0	6.6	0.9979922	-0.0514544	-564442.3	3731157.0	5.3
37	15	0.9992566	0.0514087	755876.8	-3699219.3	6.3	0.9981400	-0.0513472	-564522.2	3730994.3	5.5
37	0	0.9991385	0.0512899	755426.4	-3698691.0	7.1	0.9982700	-0.0512418	-564590.4	3730844.3	5.8
36	45	0.9990423	0.0511692	754964.5	-3698254.5	6.9	0.9983770	-0.0511324	-564639.9	3730702.7	6.0
36	30	0.9989640	0.0510492	754502.4	-3697892.8	7.2	0.9984667	-0.0510214	-564676.7	3730568.8	6.3
36	15	0.9989042	0.0509300	754041.2	-3697607.5	7.3	0.9985380	-0.0509093	-564700.1	3730442.0	6.5
36	0	0.9988660	0.0508097	753571.3	-3697413.2	7.8	0.9985868	-0.0507965	-564706.0	3730321.3	6.8
35	45	0.9988441	0.0506939	753117.6	-3697279.5	8.1	0.9986199	-0.0506820	-564702.1	3730208.0	7.0
35	30	0.9988434	0.0505757	752650.3	-3697231.3	8.3	0.9986325	-0.0505652	-564681.9	3730096.3	7.3
35	15	0.9988604	0.0504571	752179.6	-3697252.5	8.6	0.9986273	-0.0504462	-564649.0	3729986.8	7.5
35	0	0.9988986	0.0503417	751716.4	-3697355.5	8.8	0.9986002	-0.0503278	-564600.1	3729881.3	7.8
34	45	0.9989528	0.0502253	751248.0	-3697519.3	8.9	0.9985572	-0.0502068	-564539.9	3729775.0	7.8
34	30	0.9990262	0.0501130	750792.5	-3697755.7	9.2	0.9984952	-0.0500888	-564466.6	3729672.8	8.5
34	15	0.9991181	0.0499982	750324.1	-3698059.5	9.3	0.9984149	-0.0499659	-564379.6	3729565.7	8.5
34	0	0.9992283	0.0498840	749855.8	-3698429.5	9.3	0.9983162	-0.0498415	-564279.7	3729456.3	8.5
33	45	0.9993572	0.0497718	749391.8	-3698867.0	9.7	0.9981993	-0.0497179	-564166.9	3729345.5	9.0
33	30	0.9995075	0.0496585	748919.7	-3699380.0	10.1	0.9980604	-0.0495909	-564037.8	3729228.7	9.3
33	15	0.9996759	0.0495443	748441.9	-3699954.5	10.3	0.9979038	-0.0494614	-563896.2	3729105.5	9.5

[redacted] UTM ZONE: 15 LONGITUDES 95 DEGS 0 MINS TO 95 DEGS 15 MINS [redacted]

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(Q)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	0.9996198	0.0519294	757935.2	-3700907.5	6.2	0.9977285	-0.0518252	-564400.8	3731609.0	4.9
37	45	0.9994435	0.0517936	757419.6	-3700124.0	6.1	0.9979166	-0.0517090	-564501.4	3731413.7	5.1
37	30	0.9992202	0.0516530	756880.6	-3699439.0	6.8	0.9980828	-0.0515861	-564583.4	3731227.7	5.3
37	15	0.9991533	0.0515184	756364.9	-3698827.5	6.7	0.9982324	-0.0514668	-564656.3	3731056.5	5.5
37	0	0.9990363	0.0513817	755838.5	-3698300.5	6.6	0.9983615	-0.0513435	-564713.6	3730893.0	5.8
36	45	0.9989392	0.0512461	755313.8	-3697858.5	7.0	0.9984718	-0.0512191	-564757.8	3730740.8	6.0
36	30	0.9988589	0.0511118	754792.7	-3697487.0	7.2	0.9985647	-0.0510945	-564790.5	3730596.8	6.3
36	15	0.9988017	0.0509759	754262.2	-3697210.3	7.6	0.9986350	-0.0509658	-564806.1	3730458.5	6.5
36	0	0.9987610	0.0508407	753732.8	-3697000.3	7.5	0.9986883	-0.0508356	-564810.3	3730325.8	6.5
35	45	0.9987435	0.0507100	753218.0	-3696885.5	8.5	0.9987192	-0.0507084	-564799.6	3730203.2	7.3
35	30	0.9987389	0.0505767	752692.4	-3696819.8	8.0	0.9987363	-0.0505761	-564779.5	3730080.0	7.3
35	15	0.9987553	0.0504425	752161.1	-3696836.5	8.4	0.9987328	-0.0504422	-564744.9	3729959.8	7.5
35	0	0.9987912	0.0503118	751640.4	-3696929.0	8.8	0.9987102	-0.0503087	-564697.6	3729843.2	7.8
34	45	0.9988467	0.0501795	751111.7	-3697096.0	9.2	0.9986675	-0.0501720	-564636.2	3729726.3	7.8
34	30	0.9989222	0.0500492	750588.4	-3697337.5	9.2	0.9986047	-0.0500354	-564561.3	3729610.5	8.0
34	15	0.9990140	0.0499202	750068.6	-3697639.3	9.5	0.9985260	-0.0498986	-564476.2	3729494.5	8.5
34	0	0.9991273	0.0497885	749535.4	-3698018.8	10.0	0.9984264	-0.0497569	-564376.4	3729373.0	9.0
33	45	0.9992551	0.0496615	749019.6	-3698449.8	9.8	0.9983111	-0.0496184	-564267.2	3729251.8	8.8
33	30	0.9994054	0.0495319	748490.8	-3698960.5	10.0	0.9981740	-0.0494754	-564142.5	3729124.3	9.3
33	15	0.9995701	0.0494034	747965.1	-3699520.0	10.4	0.9980229	-0.0493317	-564009.7	3728991.5	9.5

TABLE D, OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 15 LONGITUDES 95 DEGS 15 MINS TO 95 DEGS 30 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9995023	0.0520847	758625.1	-3700459.3	5.9	0.9978286	-0.0519912	-564572.1	3731695.7	5.0
37	45	0.9993311	0.0519311	758029.8	-3699694.5	6.5	0.9980147	-0.0518576	-564650.1	3731490.0	5.3
37	30	0.9991730	0.0517786	757439.5	-3698989.3	6.6	0.9981866	-0.0517231	-564735.8	3731294.5	5.5
37	15	0.9990342	0.0516255	756945.0	-3698367.7	6.4	0.9983395	-0.0515854	-564800.1	3731109.0	5.5
37	0	0.9989198	0.0514753	756259.4	-3697850.5	6.8	0.9984689	-0.0514482	-564849.1	3730937.5	5.8
36	45	0.9988231	0.0513234	755666.0	-3697408.3	7.0	0.9985795	-0.0513078	-564885.1	3730774.0	6.0
36	30	0.9987456	0.0511750	755085.6	-3697047.3	7.2	0.9986713	-0.0511687	-564909.8	3730621.0	6.2
36	15	0.9986852	0.0510244	754495.2	-3696756.5	7.9	0.9987460	-0.0510259	-564922.9	3730472.5	6.5
36	0	0.9986466	0.0508721	753896.4	-3696552.7	8.0	0.9987997	-0.0508787	-564921.1	3730328.5	6.8
35	45	0.9986240	0.0507241	753314.0	-3696415.5	8.3	0.9988364	-0.0507345	-564910.1	3730192.7	7.0
35	30	0.9986240	0.0505762	752729.6	-3696367.5	8.2	0.9988510	-0.0505876	-564884.0	3730061.0	7.3
35	15	0.9986413	0.0504279	752142.9	-3696386.3	8.3	0.9988478	-0.0504387	-564846.6	3729931.3	7.5
35	0	0.9986753	0.0502820	751565.1	-3696470.5	8.6	0.9988262	-0.0502907	-564799.7	3729805.0	7.8
34	45	0.9987300	0.0501352	750981.6	-3696633.0	9.1	0.9987884	-0.0501395	-564739.4	3729678.8	8.0
34	30	0.9988056	0.0499862	750388.6	-3696873.0	9.3	0.9987273	-0.0499845	-564664.9	3729550.5	8.3
34	15	0.9988974	0.0498425	749814.8	-3697173.5	9.5	0.9986502	-0.0498326	-564581.5	3729424.5	8.5
34	0	0.9990056	0.0496966	749232.6	-3697533.0	9.7	0.9985561	-0.0496777	-564487.7	3729295.0	9.0
33	45	0.9991379	0.0495520	748652.3	-3697979.7	10.1	0.9984385	-0.0495213	-564378.3	3729162.3	9.3
33	30	0.9992843	0.0494048	748062.8	-3698473.8	10.2	0.9983069	-0.0493607	-564261.3	3729022.7	9.3
33	15	0.9994510	0.0492603	747481.6	-3699039.5	10.0	0.9981548	-0.0492010	-564131.3	3728880.0	9.5

TABLE [illegible] OCS-[illegible] CONV[illegible]ION [illegible]STAN... PAGE [illegible]

UTM ZONE: 15 LONGITUDES 95 DEGS 30 MINS TO 95 DEGS 45 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9993774	0.0522390	759310.8	-3699976.5	6.5	0.9979377	-0.0521581	-564748.6	3731775.8	5.3
37	45	0.9991989	0.0520716	758655.6	-3699180.3	6.3	0.9981315	-0.0520104	-564829.9	3731557.0	5.0
37	30	0.9990446	0.0519008	757984.6	-3698489.5	6.7	0.9983010	-0.0518577	-564894.1	3731350.7	5.5
37	15	0.9989101	0.0517341	757329.9	-3697885.3	6.8	0.9984527	-0.0517062	-564947.6	3731158.3	5.8
37	0	0.9987928	0.0515695	756683.5	-3697355.5	6.7	0.9985851	-0.0515553	-564990.4	3730977.5	5.8
36	45	0.9986948	0.0514018	756023.8	-3696907.3	7.3	0.9986994	-0.0513991	-565020.9	3730803.0	6.3
36	30	0.9986148	0.0512354	755369.4	-3696534.5	7.3	0.9987956	-0.0512424	-565041.0	3730637.2	6.5
36	15	0.9985554	0.0510704	754719.7	-3696247.3	7.8	0.9988705	-0.0510847	-565047.8	3730480.0	6.8
36	0	0.9985142	0.0509043	754065.1	-3696033.8	8.0	0.9989278	-0.0509241	-565043.8	3730327.5	7.0
35	45	0.9984947	0.0507402	753417.6	-3695907.3	7.9	0.9989633	-0.0507634	-565026.6	3730182.0	7.0
35	30	0.9984928	0.0505765	752771.4	-3695851.0	8.1	0.9989815	-0.0506010	-564999.3	3730040.0	7.5
35	15	0.9985108	0.0504135	752127.9	-3695872.5	8.5	0.9989797	-0.0504374	-564960.1	3729901.5	7.5
35	0	0.9985458	0.0502503	751483.0	-3695959.3	8.4	0.9989604	-0.0502719	-564910.6	3729764.3	7.5
34	45	0.9986008	0.0500870	750837.6	-3696122.5	9.3	0.9989214	-0.0501047	-564849.5	3729628.3	8.0
34	30	0.9986739	0.0499232	750190.0	-3696352.0	9.0	0.9988645	-0.0499346	-564777.9	3729490.7	8.3
34	15	0.9987673	0.0497626	749553.9	-3696650.2	9.3	0.9987860	-0.0497663	-564694.3	3729355.0	8.8
34	0	0.9988775	0.0496034	748923.4	-3697025.0	9.8	0.9986929	-0.0495975	-564601.8	3729217.2	8.8
33	45	0.9990082	0.0494404	748277.9	-3697464.0	9.5	0.9985781	-0.0494228	-564496.6	3729073.3	9.0
33	30	0.9991544	0.0492804	747644.2	-3697958.0	10.1	0.9984486	-0.0492499	-564386.1	3728927.3	9.3
33	15	0.9993215	0.0491203	747009.0	-3698524.8	10.3	0.9982972	-0.0490745	-564258.4	3728775.3	9.5

TABLE D. OCS-UTM CONVERSION CONSTANTS — PAGE 8

UTM ZONE: 15 LONGITUDES 95 DEGS 45 MINS TO 96 DEGS 0 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	0.9992356	0.0523950	760005.2	-3699419.0	6.0	0.9980623	-0.0523271	-564936.2	3731845.0	5.0
37	45	0.9990644	0.0522092	759267.3	-3698653.2	6.8	0.9982514	-0.0521616	-565000.8	3731618.5	5.5
37	30	0.9989035	0.0520272	758547.9	-3697935.3	6.5	0.9984294	-0.0519976	-565062.1	3731402.8	5.3
37	15	0.9987689	0.0518426	757816.8	-3697329.8	6.9	0.9985818	-0.0518289	-565105.9	3731199.5	5.8
37	0	0.9986511	0.0516621	757101.6	-3696798.0	7.0	0.9987172	-0.0516618	-565141.6	3731004.5	6.0
36	45	0.9985523	0.0514796	756379.8	-3696346.2	7.1	0.9988330	-0.0514908	-565165.1	3730825.0	6.0
36	30	0.9984775	0.0512975	755658.4	-3695994.5	7.3	0.9989258	-0.0513181	-565174.7	3730651.5	6.5
36	15	0.9984162	0.0511177	754948.4	-3695700.0	7.9	0.9990050	-0.0511462	-565178.6	3730485.3	7.0
36	0	0.9983762	0.0509374	754236.0	-3695491.3	8.0	0.9990622	-0.0509713	-565169.1	3730325.0	7.0
35	45	0.9983534	0.0507578	753527.4	-3695352.0	8.2	0.9991027	-0.0507951	-565150.8	3730169.5	7.3
35	30	0.9983528	0.0505768	752812.6	-3695300.0	8.4	0.9991210	-0.0506156	-565119.2	3730017.8	7.5
35	15	0.9983677	0.0503980	752108.3	-3695309.8	8.6	0.9991234	-0.0504363	-565080.0	3729869.5	7.5
35	0	0.9984056	0.0502194	751403.9	-3695408.0	8.7	0.9991033	-0.0502553	-565027.6	3729724.0	7.8
34	45	0.9984596	0.0500419	750705.1	-3695567.3	9.5	0.9990670	-0.0500741	-564967.3	3729580.3	8.3
34	30	0.9985315	0.0498622	749998.7	-3695792.7	9.5	0.9990128	-0.0498884	-564897.1	3729433.8	8.5
34	15	0.9986211	0.0496850	749302.6	-3696084.2	9.6	0.9989406	-0.0497036	-564817.9	3729288.0	8.8
34	0	0.9987326	0.0495087	748609.8	-3696455.8	9.8	0.9988460	-0.0495176	-564725.9	3729141.0	8.8
33	45	0.9988627	0.0493303	747909.4	-3696893.0	9.6	0.9987339	-0.0493274	-564624.8	3728988.5	9.0
33	30	0.9990107	0.0491558	747224.9	-3697394.5	10.2	0.9986029	-0.0491401	-564514.0	3728835.2	9.3
33	15	0.9991784	0.0489774	746526.4	-3697963.0	10.6	0.9984536	-0.0489468	-564393.6	3728673.0	9.8

[redacted] OCS [redacted] STA [redacted] PAGE [redacted]

UTM ZONE: 14 LONGITUDES 96 DEGS 0 MINS TO 96 DEGS 15 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0002775	-0.0119113	-37964.4	-3682315.5	4.5	0.9995820	0.0119016	-5083.7	3681224.2	4.5
37	45	1.0000936	-0.0117379	-37100.5	-3681679.7	4.3	0.9997700	0.0117329	-6111.0	3681264.0	4.0
37	30	0.9999361	-0.0115600	-36242.2	-3681162.5	3.7	0.9999314	0.0115588	-6315.7	3681325.0	3.7
37	15	0.9997938	-0.0113859	-35415.8	-3680708.7	3.6	1.0000778	0.0113881	-6502.7	3681394.3	3.5
37	0	0.9996748	-0.0112102	-34605.7	-3680356.0	3.3	1.0002009	0.0112153	-6668.0	3681470.8	3.3
36	45	0.9995731	-0.0110352	-33815.8	-3680076.3	2.8	1.0003062	0.0110426	-6815.2	3681573.0	3.0
36	30	0.9994890	-0.0108584	-33036.7	-3679871.7	2.9	1.0003943	0.0108676	-6945.0	3681677.0	2.8
36	15	0.9994249	-0.0106788	-32266.6	-3679752.3	2.2	1.0004624	0.0106894	-7055.6	3681794.0	2.3
36	0	0.9993829	-0.0105066	-31547.9	-3679716.5	1.9	1.0005081	0.0105182	-7142.0	3681913.2	2.0
35	45	0.9993553	-0.0103271	-30815.5	-3679744.0	1.8	1.0005394	0.0103391	-7215.0	3682043.3	1.8
35	30	0.9993497	-0.0101504	-30115.8	-3679856.8	1.4	1.0005486	0.0101625	-7265.3	3682177.5	1.5
35	15	0.9993606	-0.0099697	-29418.2	-3680037.0	1.3	1.0005413	0.0099814	-7298.9	3682318.8	1.2
35	0	0.9993960	-0.0097908	-28751.2	-3680310.8	1.5	1.0005094	0.0098018	-7308.2	3682463.2	1.5
34	45	0.9994421	-0.0096120	-28098.0	-3680624.5	2.0	1.0004668	0.0096221	-7304.3	3682608.5	2.0
34	30	0.9995149	-0.0094342	-27473.4	-3681038.0	2.5	1.0003973	0.0094428	-7274.6	3682755.5	2.5
34	15	0.9996009	-0.0092532	-26852.3	-3681501.5	2.6	1.0003146	0.0092602	-7230.0	3682904.2	2.8
34	0	0.9997104	-0.0090739	-26260.7	-3682050.5	3.3	1.0002083	0.0090791	-7161.9	3683051.2	3.0
33	45	0.9998330	-0.0088940	-25681.4	-3682645.0	3.1	1.0000889	0.0088968	-7078.8	3683196.5	3.3
33	30	0.9999788	-0.0087133	-25122.6	-3683323.0	3.9	0.9999462	0.0087138	-6972.5	3683339.5	3.8
33	15	1.0001376	-0.0085297	-24567.7	-3684046.3	3.8	0.9997908	0.0085275	-6851.1	3683480.8	4.0

TABLE D, OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 96 DEGS 15 MINS TO 96 DEGS 30 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0004106	-0.0117547	-37408.6	-3682940.5	3.9	0.9994528	0.0117422	-5864.5	3681410.3	4.3
37	45	1.0002307	-0.0115934	-36602.3	-3682359.0	3.8	0.9996361	0.0115853	-6078.2	3681439.5	4.0
37	30	1.0000718	-0.0114338	-35822.4	-3681818.5	3.2	0.9997987	0.0114296	-6271.7	3681482.7	3.5
37	15	0.9999338	-0.0112737	-35060.6	-3681368.5	3.7	0.9999403	0.0112729	-6445.8	3681540.0	3.3
37	0	0.9998103	-0.0111129	-34310.6	-3680982.5	3.1	1.0000672	0.0111150	-6605.1	3681607.8	3.0
36	45	0.9997103	-0.0109527	-33584.8	-3680694.8	2.7	1.0001709	0.0109571	-6742.8	3681687.7	2.8
36	30	0.9996275	-0.0107886	-32860.1	-3680482.8	2.3	1.0002571	0.0107949	-6864.7	3681780.0	2.3
36	15	0.9995671	-0.0106296	-32177.0	-3680358.8	1.9	1.0003208	0.0106372	-6963.7	3681878.0	2.0
36	0	0.9995214	-0.0104676	-31496.9	-3680296.0	2.0	1.0003701	0.0104762	-7048.7	3681984.5	1.8
35	45	0.9994978	-0.0103039	-30831.1	-3680324.3	1.3	1.0003971	0.0103130	-7113.2	3682099.8	1.5
35	30	0.9994909	-0.0101430	-30192.8	-3680416.0	1.5	1.0004075	0.0101522	-7160.2	3682218.0	1.2
35	15	0.9995059	-0.0099803	-29568.7	-3680595.0	1.2	1.0003957	0.0099892	-7186.7	3682342.5	1.2
35	0	0.9995344	-0.0098146	-28947.2	-3680827.8	1.3	1.0003701	0.0098229	-7199.0	3682471.5	1.3
34	45	0.9995900	-0.0096518	-28361.4	-3681162.0	1.8	1.0003179	0.0096592	-7186.1	3682602.2	2.0
34	30	0.9996560	-0.0094894	-27789.2	-3681534.0	2.2	1.0002550	0.0094954	-7160.8	3682732.5	2.0
34	15	0.9997460	-0.0093240	-27228.4	-3681997.2	2.4	1.0001680	0.0093284	-7113.1	3682865.8	2.5
34	0	0.9998517	-0.0091613	-26693.9	-3682514.8	3.0	1.0000653	0.0091638	-7048.9	3682995.8	3.0
33	45	0.9999782	-0.0089969	-26172.9	-3683108.5	3.3	0.9999417	0.0089972	-6964.5	3683125.3	3.0
33	30	1.0001204	-0.0088305	-25660.8	-3683757.7	3.5	0.9998028	0.0088284	-6863.9	3683253.3	3.5
33	15	1.0002828	-0.0086646	-25170.6	-3684477.2	3.6	0.9996432	0.0086598	-6743.1	3683376.8	3.5

[redacted] ABL[redacted] OCS [redacted] CO[redacted]SION [redacted] STA[redacted] PAG[redacted]

UTM ZONE: 14 LONGITUDES 96 DEGS 30 MINS TO 96 DEGS 45 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0005283	-0.0115961	-36830.5	-3683598.5	4.2	0.9993386	0.0115809	-5860.0	3681586.0	4.3
37	45	1.0003530	-0.0114511	-36099.2	-3682971.5	3.8	0.9995172	0.0114403	-6058.2	3681603.0	3.8
37	30	1.0001956	-0.0113065	-35386.8	-3682423.0	3.6	0.9996777	0.0112997	-6239.5	3681632.8	3.3
37	15	1.0000560	-0.0111603	-34684.2	-3681953.8	2.9	0.9998204	0.0111568	-6405.1	3681676.0	3.3
37	0	0.9999344	-0.0110146	-34000.2	-3681560.8	3.3	0.9999453	0.0110138	-6554.0	3681730.0	3.3
36	45	0.9998356	-0.0108716	-33347.6	-3681262.2	2.4	1.0000471	0.0108732	-6681.4	3681795.0	2.8
36	30	0.9997516	-0.0107234	-32688.3	-3681030.0	2.3	1.0001343	0.0107269	-6796.4	3681871.5	2.5
36	15	0.9996902	-0.0105757	-32051.3	-3680890.0	2.0	1.0001988	0.0105807	-6890.8	3681957.8	2.0
36	0	0.9996459	-0.0104308	-31441.6	-3680817.7	1.8	1.0002464	0.0104367	-6968.3	3682048.8	2.0
35	45	0.9996237	-0.0102840	-30844.5	-3680835.5	1.5	1.0002716	0.0102906	-7026.2	3682148.8	1.3
35	30	0.9996183	-0.0101356	-30256.6	-3680921.0	1.0	1.0002799	0.0101422	-7068.4	3682254.7	1.0
35	15	0.9996346	-0.0099898	-29699.1	-3681089.2	1.2	1.0002664	0.0099962	-7090.2	3682363.5	1.0
35	0	0.9996647	-0.0098387	-29134.7	-3681314.0	1.6	1.0002394	0.0098445	-7099.0	3682478.5	1.5
34	45	0.9997163	-0.0096926	-28609.4	-3681617.0	1.9	1.0001906	0.0096974	-7087.2	3682592.5	1.5
34	30	0.9997893	-0.0095470	-28105.0	-3681999.7	2.2	1.0001204	0.0095505	-7055.8	3682708.0	2.3
34	15	0.9998780	-0.0093995	-27609.0	-3682441.3	2.3	1.0000346	0.0094014	-7009.1	3682824.0	2.5
34	0	0.9999852	-0.0092488	-27118.6	-3682952.0	3.0	0.9999301	0.0092489	-6944.9	3682941.8	3.0
33	45	1.0001106	-0.0090998	-26651.7	-3683526.5	3.3	0.9998075	0.0090977	-6863.3	3683056.0	3.3
33	30	1.0002568	-0.0089490	-26197.2	-3684175.5	3.5	0.9996641	0.0089444	-6762.3	3683168.7	3.5
33	15	1.0004207	-0.0087996	-25765.3	-3684884.8	3.9	0.9995029	0.0087924	-6644.0	3683276.0	3.7

TABLE D. OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 96 DEGS 45 MINS TO 97 DEGS 0 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(Q)	(P)	(W)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0006428	-0.0114377	-36248.2	-3684189.5	4.1	0.9992281	0.0114202	-5860.3	3681756.3	4.0
37	45	1.0006631	-0.0113108	-35590.6	-3683529.0	4.0	0.9994103	0.0112969	-6048.6	3681756.0	3.7
37	30	1.0003018	-0.0111759	-34922.6	-3682954.2	3.1	0.9995744	0.0111668	-6223.9	3681773.5	3.5
37	15	1.0001640	-0.0110470	-34245.7	-3682476.8	3.4	0.9997150	0.0110411	-6377.2	3681802.7	3.3
37	0	1.0000465	-0.0109174	-33603.4	-3682087.0	2.6	0.9998351	0.0109143	-6513.3	3681844.8	2.8
36	45	0.9999440	-0.0107870	-33081.9	-3681761.2	2.5	0.9999405	0.0107863	-6636.0	3681896.0	2.8
36	30	0.9998698	-0.0106572	-32505.8	-3681552.7	2.0	1.0000174	0.0106583	-6735.3	3681960.5	2.0
36	15	0.9998046	-0.0105243	-31926.9	-3681383.8	1.9	1.0000855	0.0105269	-6825.9	3682031.5	2.0
36	0	0.9997644	-0.0103954	-31384.9	-3681313.5	1.8	1.0001283	0.0103988	-6894.2	3682109.5	1.5
35	45	0.9997413	-0.0102622	-30841.5	-3681315.3	1.1	1.0001543	0.0102663	-6948.4	3682196.3	1.2
35	30	0.9997373	-0.0101306	-30321.4	-3681390.8	1.1	1.0001608	0.0101349	-6984.9	3682287.3	1.0
35	15	0.9997471	-0.0100004	-29819.5	-3681519.5	1.2	1.0001537	0.0100046	-7008.0	3682380.5	1.3
35	0	0.9997843	-0.0098686	-29334.1	-3681754.8	1.4	1.0001192	0.0098721	-7008.8	3682479.7	1.5
34	45	0.9998374	-0.0097370	-28864.6	-3682050.0	1.5	1.0000687	0.0097396	-6994.5	3682580.5	1.8
34	30	0.9999038	-0.0096046	-28404.5	-3682395.0	1.8	1.0000048	0.0096059	-6967.3	3682682.0	2.0
34	15	0.9999942	-0.0094715	-27962.4	-3682829.8	2.4	0.9999169	0.0094713	-6919.6	3682785.0	2.3
34	0	1.0001031	-0.0093377	-27534.1	-3683331.3	2.7	0.9998196	0.0093355	-6855.4	3682887.3	2.8
33	45	1.0002300	-0.0092030	-27119.1	-3683897.7	3.0	0.9996862	0.0091987	-6774.4	3682987.8	2.8
33	30	1.0003749	-0.0090698	-26725.8	-3684526.8	3.4	0.9995437	0.0090630	-6677.0	3683084.8	3.3
33	15	1.0005407	-0.0089347	-26344.0	-3685229.0	3.4	0.9993807	0.0089252	-6561.2	3683178.2	3.5

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UTM ZONE: 14 LONGITUDES 97 DEGS 0 MINS TO 97 DEGS 15 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0007390	-0.0112806	-35656.6	-3684699.2	4.1	0.9991354	0.0112612	-5874.5	3681912.8	4.0
37	45	1.0005612	-0.0111658	-35058.2	-3684035.5	3.6	0.9993154	0.0111507	-6050.6	3681902.0	3.7
37	30	1.0004073	-0.0110514	-34480.7	-3683475.3	3.3	0.9994718	0.0110402	-6208.2	3681907.2	3.3
37	15	1.0002655	-0.0109352	-33906.4	-3682969.8	3.1	0.9996158	0.0109272	-6355.2	3681923.3	3.0
37	0	1.0001472	-0.0108194	-33353.0	-3682565.0	2.5	0.9997367	0.0108142	-6483.4	3681952.8	2.8
36	45	1.0000491	-0.0107051	-32822.2	-3682243.5	2.3	0.9998372	0.0107023	-6594.3	3681992.3	2.3
36	30	0.9999655	-0.0105900	-32301.3	-3681984.2	2.0	0.9999231	0.0105891	-6692.6	3682040.3	2.3
36	15	0.9999074	-0.0104766	-31807.0	-3681828.0	1.8	0.9999836	0.0104770	-6770.3	3682097.8	2.0
36	0	0.9998608	-0.0103611	-31314.9	-3681720.3	1.7	1.0000327	0.0103626	-6837.9	3682162.0	1.5
35	45	0.9998393	-0.0102427	-30831.6	-3681715.2	1.1	1.0000565	0.0102448	-6886.0	3682236.3	1.3
35	30	0.9998372	-0.0101280	-30379.3	-3681784.0	0.9	1.0000610	0.0101303	-6916.9	3682313.5	1.0
35	15	0.9998516	-0.0100092	-29924.8	-3681920.0	1.1	1.0000490	0.0100112	-6934.4	3682397.0	1.2
35	0	0.9998876	-0.0098930	-29498.6	-3682137.2	1.5	1.0000153	0.0098945	-6933.4	3682482.5	1.5
34	45	0.9999342	-0.0097770	-29083.5	-3682394.0	1.3	0.9999709	0.0097776	-6921.9	3682568.3	1.3
34	30	1.0000079	-0.0096591	-28682.5	-3682754.0	2.0	0.9998996	0.0096585	-6889.1	3682658.3	2.0
34	15	1.0000973	-0.0095438	-28305.2	-3683169.7	2.4	0.9998124	0.0095416	-6842.1	3682745.8	2.3
34	0	1.0002077	-0.0094267	-27938.5	-3683662.7	2.6	0.9997042	0.0094225	-6777.6	3682833.5	2.3
33	45	1.0003364	-0.0093087	-27584.0	-3684222.0	3.1	0.9995779	0.0093023	-6697.4	3682920.0	3.0
33	30	1.0004804	-0.0091909	-27244.0	-3684833.8	3.5	0.9994361	0.0091821	-6603.4	3683003.0	3.3
33	15	1.0006450	-0.0090734	-26922.5	-3685516.5	3.1	0.9992739	0.0090618	-6492.1	3683081.5	3.5

TABLE D, OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 97 DEGS 15 MINS TO 97 DEGS 30 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0008260	-0.0111261	-35067.9	-3685165.3	4.2	0.9990520	0.0111051	-5895.5	3682058.8	4.3
37	45	1.0006472	-0.0110230	-34521.7	-3684487.3	3.4	0.9992325	0.0110063	-6062.4	3682038.0	3.5
37	30	1.0004895	-0.0109260	-34017.3	-3683897.5	3.3	0.9993923	0.0109129	-6210.5	3682027.8	3.5
37	15	1.0003554	-0.0108248	-33513.1	-3683411.8	3.0	0.9995285	0.0108150	-6342.6	3682035.0	2.8
37	0	1.0002331	-0.0107239	-33020.9	-3682978.0	2.4	0.9996527	0.0107169	-6464.2	3682050.8	2.5
36	45	1.0001369	-0.0106245	-32554.4	-3682652.5	2.2	0.9997510	0.0106199	-6565.7	3682079.0	2.0
36	30	1.0000551	-0.0105244	-32096.9	-3682388.0	2.0	0.9998347	0.0105216	-6655.4	3682115.3	2.0
36	15	0.9999906	-0.0104223	-31645.0	-3682196.5	1.7	0.9999013	0.0104209	-6731.9	3682161.0	1.5
36	0	0.9999542	-0.0103229	-31225.2	-3682116.5	1.4	0.9999399	0.0103225	-6786.6	3682215.3	1.2
35	45	0.9999291	-0.0102236	-30816.0	-3682081.7	1.2	0.9999671	0.0102238	-6831.2	3682273.0	1.3
35	30	0.9999259	-0.0101225	-30416.3	-3682135.3	0.8	0.9999722	0.0101229	-6859.1	3682338.5	1.0
35	15	0.9999421	-0.0100228	-30037.5	-3682263.0	0.8	0.9999581	0.0100230	-6871.4	3682407.3	0.7
35	0	0.9999744	-0.0099210	-29663.9	-3682454.3	1.0	0.9999277	0.0099208	-6870.6	3682480.0	1.2
34	45	1.0000286	-0.0098175	-29300.4	-3682729.5	1.5	0.9998757	0.0098162	-6853.2	3682556.5	1.5
34	30	1.0001013	-0.0097152	-28956.9	-3683072.7	1.9	0.9998050	0.0097128	-6820.3	3682633.0	2.0
34	15	1.0001951	-0.0096178	-28648.6	-3683490.8	2.1	0.9997131	0.0096137	-6770.2	3682706.5	2.3
34	0	1.0002993	-0.0095161	-28333.1	-3683947.5	2.2	0.9996109	0.0095101	-6711.0	3682781.0	2.5
33	45	1.0004271	-0.0094135	-28032.7	-3684490.2	2.6	0.9994852	0.0094054	-6633.3	3682854.3	2.8
33	30	1.0005757	-0.0093113	-27750.1	-3685105.5	2.9	0.9993387	0.0093005	-6539.2	3682924.2	3.0
33	15	1.0007393	-0.0092092	-27480.9	-3685772.8	3.4	0.9991771	0.0091957	-6432.1	3682989.8	3.3

TABLE D. OCS-UTM CONVERSION CONSTANTS

UTM ZONE: 14 LONGITUDES 97 DEGS 30 MINS TO 97 DEGS 45 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0008979	-0.0109673	-34449.7	-3685567.5	3.7	0.9989836	0.0109452	-5929.7	3682196.0	3.7
37	45	1.0007241	-0.0108829	-33988.9	-3684896.5	3.2	0.9991589	0.0108648	-6080.3	3682164.5	3.3
37	30	1.0005653	-0.0107999	-33545.2	-3684291.5	2.8	0.9993191	0.0107854	-6218.7	3682143.0	3.3
37	15	1.0004247	-0.0107125	-33097.3	-3683768.5	2.8	0.9994614	0.0107013	-6345.6	3682136.0	2.8
37	0	1.0003102	-0.0106269	-32683.6	-3683353.3	2.4	0.9995776	0.0106204	-6452.4	3682142.5	2.5
36	45	1.0002077	-0.0105433	-32271.1	-3682991.0	2.4	0.9996819	0.0105371	-6550.2	3682157.5	2.3
36	30	1.0001307	-0.0104592	-31883.1	-3682734.0	1.8	0.9997606	0.0104548	-6629.2	3682183.5	2.0
36	15	1.0000738	-0.0103742	-31506.3	-3682559.8	1.5	0.9998193	0.0103712	-6693.7	3682218.8	1.5
36	0	1.0000281	-0.0102894	-31139.7	-3682431.5	1.4	0.9998666	0.0102875	-6748.7	3682258.5	1.2
35	45	1.0000076	-0.0102039	-30788.3	-3682404.8	0.8	0.9998888	0.0102025	-6785.8	3682307.0	1.3
35	30	1.0000011	-0.0101196	-30452.8	-3682431.5	1.2	0.9998972	0.0101185	-6811.6	3682358.7	0.7
35	15	1.0000163	-0.0100311	-30117.0	-3682546.5	0.7	0.9998835	0.0100298	-6822.0	3682418.0	0.7
35	0	1.0000535	-0.0099496	-29824.3	-3682741.5	1.4	0.9998481	0.0099478	-6814.9	3682476.5	1.3
34	45	1.0001067	-0.0098594	-29510.4	-3683002.0	1.2	0.9997966	0.0098567	-6796.8	3682542.0	1.5
34	30	1.0001787	-0.0097751	-29233.2	-3683329.0	1.6	0.9997265	0.0097711	-6763.6	3682604.5	1.8
34	15	1.0002691	-0.0096920	-28975.0	-3683722.5	1.9	0.9996377	0.0096865	-6716.1	3682666.5	2.3
34	0	1.0003805	-0.0096048	-28716.2	-3684195.8	2.5	0.9995279	0.0095972	-6653.3	3682730.0	2.5
33	45	1.0005076	-0.0095200	-28479.0	-3684721.7	2.5	0.9994027	0.0095102	-6578.0	3682789.5	2.8
33	30	1.0006527	-0.0094319	-28243.4	-3685313.5	3.3	0.9992594	0.0094196	-6489.0	3682848.0	3.3
33	15	1.0008184	-0.0093488	-28041.3	-3685973.2	3.4	0.9990956	0.0093335	-6384.4	3682899.0	3.3

TABLE D. OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 97 DEGS 45 MINS TO 90 DEGS 0 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0009604	-0.0108115	-33837.0	-3685924.7	3.5	0.9989244	0.0107884	-5969.8	3682324.3	3.5
37	45	1.0007830	-0.0107422	-33440.7	-3685227.7	3.1	0.9991030	0.0107231	-6111.0	3682279.3	3.5
37	30	1.0006266	-0.0106720	-33055.3	-3684623.0	3.1	0.9992607	0.0106564	-6238.4	3682249.7	3.0
37	15	1.0004908	-0.0106030	-32689.5	-3684106.8	2.6	0.9993977	0.0105907	-6350.9	3682232.8	2.5
37	0	1.0003728	-0.0105321	-32328.2	-3683668.0	2.3	0.9995170	0.0105225	-6451.8	3682227.8	2.3
36	45	1.0002723	-0.0104616	-31980.6	-3683303.0	2.4	0.9996189	0.0104541	-6540.1	3682232.3	2.3
36	30	1.0001919	-0.0103922	-31651.8	-3683021.7	1.9	0.9997007	0.0103866	-6614.0	3682246.5	1.8
36	15	1.0001314	-0.0103220	-31333.8	-3682822.2	1.5	0.9997625	0.0103178	-6674.1	3682269.5	1.5
36	0	1.0000906	-0.0102531	-31034.6	-3682702.3	1.0	0.9998046	0.0102500	-6720.1	3682299.7	0.9
35	45	1.0000695	-0.0101835	-30746.1	-3682661.0	0.9	0.9998273	0.0101808	-6752.6	3682336.2	1.0
35	30	1.0000677	-0.0101127	-30466.9	-3682697.3	0.6	0.9998304	0.0101103	-6771.7	3682379.2	0.5
35	15	1.0000852	-0.0100435	-30207.1	-3682806.8	0.8	0.9998145	0.0100408	-6776.9	3682425.0	0.8
35	0	1.0001161	-0.0099753	-29961.6	-3682967.8	1.3	0.9997849	0.0099723	-6771.7	3682472.3	1.0
34	45	1.0001715	-0.0099042	-29721.3	-3683223.0	1.2	0.9997310	0.0099002	-6750.3	3682524.3	1.3
34	30	1.0002453	-0.0098344	-29499.1	-3683546.5	1.9	0.9996585	0.0098290	-6715.3	3682576.5	1.8
34	15	1.0003325	-0.0097657	-29291.4	-3683917.3	2.2	0.9995728	0.0097588	-6670.2	3682627.3	2.0
34	0	1.0004435	-0.0096940	-29088.2	-3684376.8	2.3	0.9994634	0.0096851	-6608.9	3682679.2	2.5
33	45	1.0005724	-0.0096250	-28911.3	-3684898.2	2.5	0.9993359	0.0096147	-6534.4	3682726.8	2.8
33	30	1.0007195	-0.0095544	-28735.3	-3685485.3	3.3	0.9991903	0.0095407	-6447.0	3682773.0	3.0
33	15	1.0008845	-0.0094843	-28577.1	-3686132.5	3.1	0.9990269	0.0094676	-6346.6	3682814.0	3.0

UTM ZONE: 14 LONGITUDES 98 DEGS 0 MINS TO 98 DEGS 15 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0010079	-0.0106541	-33207.1	-3686216.3	3.9	0.9988803	0.0106302	-6020.7	3682441.5	3.5
37	45	1.0008328	-0.0105998	-32879.1	-3685519.0	3.4	0.9990563	0.0105800	-6149.1	3682387.8	3.0
37	30	1.0006757	-0.0105458	-32564.2	-3684900.7	2.8	0.9992141	0.0105294	-6265.6	3682347.0	2.8
37	15	1.0005394	-0.0104908	-32258.5	-3684373.0	2.5	0.9993513	0.0104776	-6369.1	3682320.3	2.3
37	0	1.0004208	-0.0104360	-31965.5	-3683920.8	2.2	0.9994710	0.0104254	-6460.9	3682304.0	2.3
36	45	1.0003225	-0.0103826	-31691.2	-3683553.5	1.7	0.9995703	0.0103742	-6538.9	3682298.3	2.0
36	30	1.0002443	-0.0103301	-31425.8	-3683270.5	1.5	0.9996495	0.0103216	-6604.2	3682303.0	1.5
36	15	1.0001833	-0.0102739	-31172.7	-3683058.7	1.0	0.9997116	0.0102687	-6658.1	3682315.0	1.2
36	0	1.0001422	-0.0102186	-30928.7	-3682927.5	1.2	0.9997539	0.0102145	-6699.2	3682335.2	1.3
35	45	1.0001204	-0.0101648	-30702.9	-3682873.0	0.8	0.9997767	0.0101611	-6727.0	3682361.2	0.8
35	30	1.0001181	-0.0101122	-30494.7	-3682894.7	0.7	0.9997802	0.0101087	-6741.8	3682391.5	0.8
35	15	1.0001349	-0.0100563	-30286.3	-3682993.0	0.6	0.9997644	0.0100527	-6744.6	3682420.0	0.7
35	0	1.0001681	-0.0100006	-30089.7	-3683153.5	1.1	0.9997324	0.0099965	-6736.3	3682466.7	1.0
34	45	1.0002228	-0.0099450	-29907.6	-3683395.8	1.3	0.9996787	0.0099400	-6713.7	3682509.2	1.5
34	30	1.0002962	-0.0098931	-29751.7	-3683705.5	1.8	0.9996065	0.0098867	-6678.2	3682548.3	1.8
34	15	1.0003854	-0.0098390	-29598.4	-3684073.8	2.0	0.9995184	0.0098310	-6632.2	3682588.7	1.8
34	0	1.0004958	-0.0097850	-29459.3	-3684519.0	1.8	0.9994092	0.0097750	-6572.2	3682628.5	2.0
33	45	1.0006243	-0.0097323	-29336.8	-3685028.3	2.7	0.9992819	0.0097200	-6500.1	3682665.5	2.8
33	30	1.0007709	-0.0096763	-29214.5	-3685602.5	2.7	0.9991366	0.0096614	-6415.8	3682700.8	2.8
33	15	1.0009382	-0.0096228	-29114.6	-3686246.8	2.9	0.9989707	0.0096048	-6317.9	3682730.5	3.3

TABLE D. OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 96 DEGS 15 MINS TO 90 DEGS 30 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0010489	-0.0104986	-32580.5	-3686476.5	3.7	0.9988427	0.0104742	-6075.4	3602550.5	3.7
37	45	1.0008705	-0.0104571	-32308.1	-3685757.0	2.9	0.9990215	0.0104368	-6195.2	3602487.0	3.0
37	30	1.0007157	-0.0104182	-32060.8	-3685138.7	2.6	0.9991767	0.0104012	-6299.6	3602437.8	2.8
37	15	1.0005763	-0.0103782	-31818.1	-3684588.3	2.5	0.9993169	0.0103643	-6395.2	3602400.0	2.5
37	0	1.0004600	-0.0103407	-31600.0	-3684135.0	2.2	0.9994338	0.0103294	-6475.7	3602374.2	2.3
36	45	1.0003612	-0.0103010	-31383.5	-3683757.0	1.7	0.9995332	0.0102919	-6546.4	3602359.5	2.0
36	30	1.0002828	-0.0102626	-31184.6	-3683462.3	2.0	0.9996125	0.0102552	-6604.3	3602353.8	1.5
36	15	1.0002239	-0.0102231	-30993.7	-3683249.5	1.2	0.9996719	0.0102171	-6650.4	3602357.0	1.2
36	0	1.0001822	-0.0101838	-30813.6	-3683106.0	0.7	0.9997144	0.0101788	-6685.9	3602367.0	1.0
35	45	1.0001600	-0.0101457	-30650.4	-3683040.3	0.5	0.9997374	0.0101413	-6709.0	3602382.7	0.6
35	30	1.0001545	-0.0101055	-30489.4	-3683041.3	0.3	0.9997436	0.0101013	-6722.3	3602404.3	0.5
35	15	1.0001709	-0.0100677	-30351.0	-3683126.5	0.7	0.9997280	0.0100633	-6721.6	3602429.0	0.6
35	0	1.0002091	-0.0100277	-30217.1	-3683296.3	0.8	0.9996907	0.0100227	-6708.1	3602459.0	0.8
34	45	1.0002635	-0.0099901	-30102.7	-3683526.0	1.5	0.9996371	0.0099842	-6684.0	3602488.8	1.3
34	30	1.0003309	-0.0099514	-29992.6	-3683804.2	1.4	0.9995704	0.0099443	-6651.5	3602519.0	1.2
34	15	1.0004252	-0.0099129	-29899.2	-3684182.2	1.9	0.9994771	0.0099041	-6602.9	3602550.5	2.0
34	0	1.0005351	-0.0098745	-29816.0	-3684615.8	2.1	0.9993681	0.0098636	-6544.4	3602580.0	2.0
33	45	1.0006633	-0.0098350	-29739.9	-3685114.8	2.3	0.9992409	0.0098218	-6474.5	3602608.0	2.3
33	30	1.0008122	-0.0097979	-29685.2	-3685685.5	2.6	0.9990930	0.0097820	-6391.8	3602631.7	2.8
33	15	1.0009762	-0.0097586	-29632.1	-3686309.3	3.1	0.9989300	0.0097396	-6299.3	3602652.0	3.0

TABLE D. UCS-UTM CONVERSION CONSTANTS PAGE D-19

UTM ZONE: 14 LONGITUDES 98 DEGS 30 MINS TO 98 DEGS 45 MINS

LATITUDE		UTM TO UCS					OCS TO UTM				
DEG	MIN	(D)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0010719	-0.0103404	-31932.4	-3686659.3	3.3	0.9988227	0.0103159	-6141.9	3682648.5	3.5
37	45	1.0009004	-0.0103180	-31747.4	-3685957.0	3.1	0.9989945	0.0102974	-6244.6	3682577.5	2.8
37	30	1.0007397	-0.0102904	-31548.5	-3685307.5	2.3	0.9991553	0.0102736	-6343.2	3682518.5	2.5
37	15	1.0006055	-0.0102670	-31379.1	-3684768.0	2.3	0.9992899	0.0102527	-6425.6	3682473.5	2.3
37	0	1.0004846	-0.0102461	-31228.7	-3684286.0	2.0	0.9994110	0.0102344	-6499.1	3682436.0	2.0
36	45	1.0003983	-0.0102213	-31076.5	-3683910.3	1.3	0.9995076	0.0102118	-6560.3	3682413.5	1.5
36	30	1.0003066	-0.0101955	-30928.8	-3683595.2	1.5	0.9995898	0.0101877	-6613.5	3682398.8	1.5
36	15	1.0002462	-0.0101736	-30808.7	-3683365.8	1.0	0.9996506	0.0101673	-6653.2	3682391.5	1.0
36	0	1.0002085	-0.0101497	-30693.1	-3683229.0	1.0	0.9996889	0.0101442	-6681.0	3682393.5	1.0
35	45	1.0001845	-0.0101269	-30590.0	-3683147.2	0.6	0.9997132	0.0101220	-6700.2	3682399.8	0.6
35	30	1.0001827	-0.0101020	-30491.0	-3683153.5	0.5	0.9997154	0.0100972	-6707.5	3682413.0	0.3
35	15	1.0001974	-0.0100793	-30410.5	-3683223.2	0.6	0.9997011	0.0100744	-6704.6	3682428.5	0.5
35	0	1.0002313	-0.0100556	-30336.5	-3683367.0	1.1	0.9996679	0.0100501	-6691.1	3682447.5	0.7
34	45	1.0002879	-0.0100348	-30286.8	-3683595.0	0.9	0.9996117	0.0100283	-6664.1	3682467.8	1.0
34	30	1.0003620	-0.0100123	-30240.4	-3683889.2	1.3	0.9995382	0.0100046	-6627.5	3682489.5	1.5
34	15	1.0004519	-0.0099877	-30194.9	-3684242.0	1.4	0.9994489	0.0099782	-6581.8	3682512.0	1.8
34	0	1.0005600	-0.0099642	-30164.5	-3684660.3	1.8	0.9993412	0.0099527	-6525.4	3682532.5	2.0
33	45	1.0006891	-0.0099431	-30154.5	-3685152.3	2.4	0.9992127	0.0099292	-6456.9	3682549.7	2.3
33	30	1.0008365	-0.0099209	-30151.0	-3685708.3	2.3	0.9990663	0.0099042	-6378.0	3682564.0	2.3
33	15	1.0010016	-0.0098975	-30153.3	-3686326.0	2.6	0.9989020	0.0098778	-6288.9	3682575.0	3.0

TABLE D. OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 98 DEGS 45 MINS TO 99 DEGS 0 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0010885	-0.0101854	-31293.6	-3686809.5	3.3	0.9988093	0.0101610	-6210.6	3602738.0	3.5
37	45	1.0009097	-0.0101766	-31165.2	-3686069.5	3.3	0.9989881	0.0101560	-6306.5	3602656.0	3.0
37	30	1.0007545	-0.0101666	-31044.4	-3685433.0	2.9	0.9991432	0.0101493	-6390.7	3602590.3	2.5
37	15	1.0006157	-0.0101584	-30939.7	-3684867.5	2.4	0.9992818	0.0101440	-6465.4	3602534.8	2.5
37	0	1.0004989	-0.0101485	-30839.2	-3684396.3	1.8	0.9993986	0.0101367	-6529.5	3602493.0	2.0
36	45	1.0003997	-0.0101397	-30753.0	-3683999.0	1.7	0.9994979	0.0101301	-6583.8	3602460.5	1.8
36	30	1.0003220	-0.0101305	-30675.9	-3683691.0	1.5	0.9995757	0.0101225	-6627.1	3602438.5	1.3
36	15	1.0002614	-0.0101235	-30616.9	-3683452.8	1.2	0.9996365	0.0101169	-6660.6	3602422.7	1.2
36	0	1.0002190	-0.0101160	-30565.1	-3683288.5	0.6	0.9996789	0.0101103	-6684.7	3602414.5	0.8
35	45	1.0001978	-0.0101068	-30518.2	-3683204.8	0.6	0.9997002	0.0101017	-6698.2	3602413.8	0.7
35	30	1.0001960	-0.0100988	-30485.6	-3683207.0	0.5	0.9997023	0.0100938	-6701.2	3602417.8	0.3
35	15	1.0002117	-0.0100902	-30460.0	-3683273.3	0.5	0.9996866	0.0100850	-6694.9	3602425.8	0.3
35	0	1.0002481	-0.0100852	-30451.7	-3683417.0	0.5	0.9996505	0.0100775	-6677.5	3602436.3	0.8
34	45	1.0002974	-0.0100775	-30455.1	-3683610.7	1.0	0.9996010	0.0100709	-6652.9	3602447.0	1.2
34	30	1.0003703	-0.0100702	-30464.0	-3683890.3	1.1	0.9995288	0.0100621	-6616.5	3602460.0	1.3
34	15	1.0004625	-0.0100623	-30481.2	-3684243.3	1.6	0.9994366	0.0100525	-6569.7	3602473.5	1.5
34	0	1.0005747	-0.0100549	-30510.9	-3684667.5	1.7	0.9993249	0.0100430	-6512.4	3602485.5	1.8
33	45	1.0007023	-0.0100486	-30552.7	-3685146.0	2.6	0.9991976	0.0100343	-6446.8	3602494.5	2.3
33	30	1.0008492	-0.0100418	-30602.7	-3685692.3	2.5	0.9990510	0.0100247	-6371.0	3602500.5	2.5
33	15	1.0010155	-0.0100357	-30665.1	-3686305.0	2.6	0.9988852	0.0100153	-6285.0	3602501.8	2.8

TABLE D. OCS-UTM CONVERSION CONSTANTS PAGE 21

UTM ZONE: 14 LONGITUDES 99 DEGS 0 MINS TO 99 DEGS 15 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0010902	-0.0100292	-30641.7	-3686894.5	3.3	0.9988109	0.0100052	-6287.8	3682817.0	3.5
37	45	1.0009110	-0.0100344	-30575.7	-3686116.5	2.8	0.9989894	0.0100140	-6372.8	3682728.0	3.0
37	30	1.0007550	-0.0100406	-30525.6	-3685501.8	2.6	0.9991442	0.0100235	-6445.9	3682654.0	2.8
37	15	1.0006170	-0.0100463	-30481.4	-3684929.0	2.2	0.9992827	0.0100321	-6511.4	3682591.8	2.3
37	0	1.0005002	-0.0100525	-30449.5	-3684449.8	1.6	0.9993992	0.0100408	-6566.1	3682541.7	2.0
36	45	1.0004008	-0.0100590	-30430.6	-3684043.5	1.2	0.9994983	0.0100502	-6612.1	3682501.3	1.5
36	30	1.0003216	-0.0100671	-30421.4	-3683721.5	1.3	0.9995773	0.0100592	-6648.4	3682470.2	1.3
36	15	1.0002608	-0.0100738	-30418.6	-3683475.5	0.8	0.9996378	0.0100672	-6675.9	3682447.7	1.0
36	0	1.0002186	-0.0100799	-30422.3	-3683305.3	0.8	0.9996799	0.0100742	-6694.9	3682432.8	0.6
35	45	1.0001973	-0.0100877	-30442.9	-3683217.2	0.8	0.9997011	0.0100826	-6703.2	3682423.3	0.8
35	30	1.0001938	-0.0100949	-30469.4	-3683200.5	0.5	0.9997044	0.0100899	-6703.0	3682419.2	0.3
35	15	1.0002110	-0.0101037	-30512.1	-3683263.5	0.3	0.9996870	0.0100986	-6692.6	3682418.8	0.3
35	0	1.0002445	-0.0101114	-30558.2	-3683389.2	0.6	0.9996534	0.0101057	-6674.5	3682421.5	0.8
34	45	1.0002981	-0.0101196	-30616.0	-3683591.0	0.8	0.9995996	0.0101129	-6646.7	3682425.8	1.0
34	30	1.0003719	-0.0101273	-30681.5	-3683868.3	1.3	0.9995258	0.0101192	-6609.1	3682431.5	1.3
34	15	1.0004629	-0.0101367	-30761.4	-3684207.2	1.4	0.9994348	0.0101268	-6563.2	3682436.0	1.5
34	0	1.0005721	-0.0101460	-30849.8	-3684612.3	1.7	0.9993255	0.0101340	-6508.4	3682439.3	1.8
33	45	1.0007008	-0.0101546	-30944.9	-3685087.7	2.5	0.9991966	0.0101402	-6444.3	3682441.0	2.5
33	30	1.0008479	-0.0101648	-31053.2	-3685626.3	2.5	0.9990498	0.0101471	-6371.4	3682438.5	2.5
33	15	1.0010127	-0.0101731	-31165.6	-3686226.0	2.9	0.9988852	0.0101525	-6290.0	3682432.2	2.8

TABLE D, OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 99 DEGS 15 MINS TO 99 DEGS 30 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[J]	[P]	[Q]	[K]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0010780	-0.0098736	-29985.7	-3686918.2	3.2	0.9988259	0.0098502	-6371.2	3682885.5	3.5
37	45	1.0009019	-0.0098938	-29967.8	-3686175.8	3.1	0.9990013	0.0098740	-6443.5	3682791.0	2.8
37	30	1.0007439	-0.0099140	-29998.0	-3685512.8	2.6	0.9991586	0.0098974	-6507.8	3682709.3	2.8
37	15	1.0006064	-0.0099353	-30021.9	-3684938.5	2.2	0.9992952	0.0099215	-6562.6	3682640.5	2.5
37	0	1.0004884	-0.0099570	-30055.6	-3684446.7	2.1	0.9994129	0.0099457	-6608.9	3682583.0	2.0
36	45	1.0003904	-0.0099787	-30098.1	-3684040.3	1.4	0.9995102	0.0099694	-6646.3	3682536.3	1.8
36	30	1.0003084	-0.0099998	-30145.2	-3683700.3	1.6	0.9995917	0.0099921	-6677.1	3682498.0	1.5
36	15	1.0002491	-0.0100240	-30214.7	-3683452.8	0.8	0.9996504	0.0100177	-6696.7	3682468.0	1.0
36	0	1.0002081	-0.0100455	-30281.2	-3683280.0	0.8	0.9996909	0.0100401	-6709.4	3682446.3	0.8
35	45	1.0001855	-0.0100685	-30361.8	-3683180.0	0.8	0.9997131	0.0100637	-6713.5	3682429.5	0.8
35	30	1.0001822	-0.0100904	-30446.4	-3683157.3	0.3	0.9997160	0.0100857	-6709.6	3682418.8	0.1
35	15	1.0001967	-0.0101150	-30549.2	-3683202.3	0.3	0.9997011	0.0101101	-6697.2	3682410.2	0.3
35	0	1.0002328	-0.0101384	-30656.5	-3683331.3	0.8	0.9996644	0.0101329	-6675.5	3682406.2	1.0
34	45	1.0002867	-0.0101623	-30773.7	-3683526.5	0.7	0.9996102	0.0101558	-6646.2	3682403.3	0.8
34	30	1.0003576	-0.0101867	-30899.7	-3683785.2	1.2	0.9995388	0.0101788	-6609.3	3682401.0	1.5
34	15	1.0004472	-0.0102099	-31029.5	-3684113.2	1.8	0.9994488	0.0102003	-6564.5	3682399.2	1.8
34	0	1.0005579	-0.0102364	-31180.8	-3684516.0	1.8	0.9993377	0.0102246	-6510.1	3682394.8	2.0
33	45	1.0006855	-0.0102612	-31332.7	-3684979.3	2.1	0.9992099	0.0102469	-6448.6	3682388.7	2.3
33	30	1.0008323	-0.0102854	-31490.8	-3685510.5	2.5	0.9990628	0.0102681	-6378.7	3682379.8	2.5
33	15	1.0009972	-0.0103117	-31664.1	-3686103.0	2.9	0.9988977	0.0102911	-6301.0	3682365.5	2.8

TABLE [illegible] OCS [illegible] CONVERSION CONSTANTS PAGE [illegible]
UTM ZONE: 14 LONGITUDES 99 DEGS 30 MINS TO 99 DEGS 45 MINS

LATITUDE DEG	LATITUDE MIN	UTM TO OCS [O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	OCS TO UTM [S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0010551	-0.0097163	-29318.1	-3686894.0	3.2	0.9988517	0.0096937	-6460.0	3682945.7	3.5
37	45	1.0008792	-0.0097516	-29387.5	-3686146.0	2.8	0.9990266	0.0097326	-6520.8	3682845.0	3.0
37	30	1.0007213	-0.0097881	-29468.9	-3685477.0	2.7	0.9991835	0.0097722	-6573.9	3682756.5	2.8
37	15	1.0005827	-0.0098227	-29549.8	-3684892.5	2.2	0.9993211	0.0098095	-6620.3	3682681.8	2.5
37	0	1.0004647	-0.0098617	-29657.1	-3684393.2	2.3	0.9994383	0.0098509	-6656.7	3682617.0	2.3
36	45	1.0003642	-0.0098982	-29761.3	-3683970.2	1.7	0.9995379	0.0098895	-6687.3	3682563.3	1.8
36	30	1.0002865	-0.0099347	-29874.2	-3683641.5	1.8	0.9996148	0.0099276	-6708.7	3682520.2	1.5
36	15	1.0002233	-0.0099722	-29996.5	-3683372.3	1.4	0.9996772	0.0099664	-6724.4	3682483.2	1.3
36	0	1.0001839	-0.0100101	-30130.1	-3683200.0	0.7	0.9997159	0.0100051	-6730.3	3682455.3	0.8
35	45	1.0001600	-0.0100484	-30271.0	-3683088.8	0.5	0.9997390	0.0100440	-6730.3	3682432.0	0.6
35	30	1.0001568	-0.0100872	-30422.1	-3683059.3	0.5	0.9997414	0.0100830	-6721.9	3682414.3	0.3
35	15	1.0001727	-0.0101259	-30580.3	-3683104.0	0.7	0.9997247	0.0101214	-6706.0	3682400.2	0.6
35	0	1.0002065	-0.0101660	-30750.8	-3683217.0	0.8	0.9996902	0.0101610	-6683.0	3682388.7	0.7
34	45	1.0002575	-0.0102045	-30921.3	-3683395.5	0.8	0.9996384	0.0101985	-6653.6	3682379.5	1.0
34	30	1.0003314	-0.0102456	-31111.2	-3683659.2	1.7	0.9995637	0.0102382	-6614.7	3682370.7	1.5
34	15	1.0004210	-0.0102844	-31297.9	-3683980.8	1.9	0.9994733	0.0102752	-6570.1	3682362.3	1.8
34	0	1.0005292	-0.0103254	-31500.0	-3684368.0	2.0	0.9993644	0.0103140	-6518.1	3682351.7	2.0
33	45	1.0006568	-0.0103656	-31706.7	-3684825.3	2.3	0.9992362	0.0103517	-6458.6	3682339.5	2.5
33	30	1.0008025	-0.0104069	-31924.2	-3685345.8	2.8	0.9990898	0.0103900	-6392.1	3682323.5	2.8
33	15	1.0009702	-0.0104486	-32151.8	-3685942.3	3.1	0.9989216	0.0104283	-6316.[illegible]	3682303.0	3.0

TABLE D. OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 99 DEGS 45 MINS TO 100 DEGS 0 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[J]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0010202	-0.0095592	-28646.6	-3686815.5	3.5	0.9988696	0.0095177	-6553.6	3682996.3	3.3
37	45	1.0008430	-0.0096103	-28785.2	-3686056.8	3.0	0.9990653	0.0095922	-6603.1	3682889.0	3.0
37	30	1.0006655	-0.0096607	-28927.9	-3685304.0	2.7	0.9992216	0.0096457	-6646.0	3682795.8	2.8
37	15	1.0005486	-0.0097119	-29061.5	-3684800.3	2.4	0.9993573	0.0096996	-6681.2	3682715.3	2.5
37	0	1.0004201	-0.0097648	-29247.2	-3684286.0	2.3	0.9994767	0.0097548	-6710.3	3682644.5	2.0
36	45	1.0003293	-0.0098169	-29417.5	-3683863.8	2.1	0.9995745	0.0098089	-6731.9	3682585.5	2.0
36	30	1.0002477	-0.0098687	-29592.7	-3683514.0	1.7	0.9996549	0.0098624	-6747.6	3682535.5	1.5
36	15	1.0001888	-0.0099215	-29779.8	-3683256.5	1.4	0.9997126	0.0099165	-6754.8	3682494.5	1.3
36	0	1.0001454	-0.0099759	-29978.2	-3683061.7	1.1	0.9997548	0.0099718	-6756.5	3682459.0	1.0
35	45	1.0001217	-0.0100279	-30174.0	-3682946.7	0.8	0.9997774	0.0100243	-6752.0	3682430.8	0.8
35	30	1.0001189	-0.0100835	-30391.7	-3682912.0	0.6	0.9997792	0.0100801	-6739.1	3682406.8	0.5
35	15	1.0001323	-0.0101379	-30609.6	-3682942.2	0.9	0.9997646	0.0101343	-6721.1	3682386.8	0.7
35	0	1.0001662	-0.0101927	-30836.2	-3683050.0	1.2	0.9997296	0.0101885	-6695.9	3682369.7	1.0
34	45	1.0002190	-0.0102462	-31064.2	-3683230.5	1.8	0.9996758	0.0102410	-6664.4	3682355.5	1.5
34	30	1.0002891	-0.0103036	-31312.6	-3683473.0	1.5	0.9996046	0.0102970	-6626.5	3682340.0	1.5
34	15	1.0003805	-0.0103574	-31555.1	-3683795.7	1.6	0.9995122	0.0103489	-6581.6	3682326.3	1.8
34	0	1.0004889	-0.0104150	-31817.3	-3684178.0	1.8	0.9994028	0.0104043	-6530.6	3682309.8	2.0
33	45	1.0006181	-0.0104712	-32081.6	-3684635.8	2.6	0.9992726	0.0104580	-6472.4	3682291.8	2.8
33	30	1.0007640	-0.0105280	-32353.2	-3685151.0	2.7	0.9991257	0.0105117	-6408.7	3682270.0	2.8
33	15	1.0009265	-0.0105861	-32635.9	-3685722.5	3.1	0.9989622	0.0105666	-6339.5	3682243.3	3.0

[redacted] [redacted] [redacted] TABLE [redacted] OCS [redacted] CONVERSION [redacted] STAN [redacted] PAGE [redacted]

UTM ZONE: 14 LONGITUDES 100 DEGS 0 MINS TO 100 DEGS 15 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0009757	-0.0094012	-27968.3	-3686694.5	3.2	0.9989368	0.0093810	-6650.6	3683038.8	3.5
37	45	1.0007963	-0.0094675	-28173.7	-3685920.5	3.4	0.9991147	0.0094506	-6689.6	3682925.0	3.3
37	30	1.0006377	-0.0095336	-28384.3	-3685238.0	3.3	0.9992718	0.0095197	-6722.2	3682826.3	3.0
37	15	1.0004998	-0.0096015	-28609.4	-3684645.0	2.6	0.9994081	0.0095903	-6747.3	3682740.0	2.5
37	0	1.0003810	-0.0096676	-28832.7	-3684134.0	2.2	0.9995255	0.0096587	-6767.4	3682665.8	2.3
36	45	1.0002798	-0.0097354	-29069.8	-3683696.2	2.4	0.9996253	0.0097288	-6781.5	3682600.5	2.3
36	30	1.0002000	-0.0098030	-29309.5	-3683348.7	1.9	0.9997036	0.0097977	-6789.2	3682546.0	1.8
36	15	1.0001361	-0.0098707	-29555.9	-3683066.3	1.8	0.9997663	0.0098667	-6792.2	3682498.5	1.5
36	0	1.0000932	-0.0099398	-29814.0	-3682869.3	0.8	0.9998077	0.0099367	-6788.1	3682458.5	1.0
35	45	1.0000713	-0.0100082	-30076.0	-3682755.8	0.8	0.9998283	0.0100056	-6777.7	3682425.5	0.8
35	30	1.0000660	-0.0100785	-30350.3	-3682707.5	0.6	0.9998322	0.0100761	-6762.1	3682396.3	0.6
35	15	1.0000812	-0.0101481	-30628.1	-3682738.8	0.7	0.9998155	0.0101455	-6740.3	3682371.5	0.6
35	0	1.0001128	-0.0102174	-30909.1	-3682833.8	1.2	0.9997826	0.0102143	-6713.8	3682349.8	1.0
34	45	1.0001673	-0.0102883	-31203.8	-3683014.3	1.3	0.9997267	0.0102841	-6679.9	3682329.8	1.2
34	30	1.0002377	-0.0103601	-31506.1	-3683254.3	1.5	0.9996547	0.0103545	-6641.4	3682310.0	1.5
34	15	1.0003281	-0.0104311	-31811.2	-3683567.5	1.8	0.9995630	0.0104238	-6596.9	3682290.8	2.0
34	0	1.0004354	-0.0105037	-32126.8	-3683941.3	2.3	0.9994543	0.0104941	-6547.5	3682269.3	2.3
33	45	1.0005596	-0.0105755	-32444.5	-3684375.5	2.5	0.9993287	0.0105633	-6493.4	3682246.0	2.5
33	30	1.0007058	-0.0106477	-32770.0	-3684887.7	3.1	0.9991810	0.0106324	-6432.4	3682219.5	3.0
33	15	1.0008702	-0.0107220	-33108.5	-3685461.0	3.0	0.9990156	0.0107032	-6366.3	3682188.0	3.0

TABLE D, OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 100 DEGS 15 MINS TO 100 DEGS 30 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0009164	-0.0092448	-27291.7	-3686506.5	3.3	0.9989989	0.0092261	-6751.8	3683069.5	3.5
37	45	1.0007387	-0.0093245	-27557.7	-3685736.2	3.7	0.9991747	0.0093090	-6779.4	3682953.0	3.6
37	30	1.0005794	-0.0094063	-27836.7	-3685046.2	3.3	0.9993324	0.0093936	-6801.4	3682849.3	3.0
37	15	1.0004390	-0.0094881	-28121.6	-3684439.2	2.7	0.9994708	0.0094782	-6818.2	3682758.0	3.0
37	0	1.0003181	-0.0095703	-28412.6	-3683914.8	2.3	0.9995901	0.0095627	-6829.8	3682678.3	2.5
36	45	1.0002186	-0.0096527	-28710.5	-3683481.0	1.9	0.9996878	0.0096471	-6835.3	3682610.0	2.3
36	30	1.0001367	-0.0097361	-29016.4	-3683119.8	2.0	0.9997681	0.0097320	-6836.2	3682550.0	2.0
36	15	1.0000746	-0.0098190	-29326.1	-3682840.5	1.7	0.9998285	0.0098163	-6831.9	3682499.0	1.5
36	0	1.0000323	-0.0099029	-29644.6	-3682641.5	1.0	0.9998692	0.0099011	-6822.1	3682455.3	1.0
35	45	1.0000081	-0.0099871	-29968.9	-3682514.5	1.1	0.9998917	0.0099858	-6807.6	3682417.0	1.0
35	30	1.0000013	-0.0100732	-30305.7	-3682463.8	0.9	0.9998967	0.0100721	-6787.6	3682383.3	0.8
35	15	1.0000178	-0.0101580	-30642.1	-3682488.5	0.8	0.9998786	0.0101567	-6761.0	3682354.2	0.6
35	0	1.0000497	-0.0102442	-30987.9	-3682579.8	1.1	0.9998468	0.0102423	-6733.9	3682327.8	1.2
34	45	1.0001007	-0.0103302	-31337.9	-3682743.2	1.1	0.9997922	0.0103273	-6700.0	3682303.2	1.5
34	30	1.0001702	-0.0104170	-31695.8	-3682975.5	1.8	0.9997209	0.0104128	-6661.2	3682279.3	1.8
34	15	1.0002598	-0.0105053	-32064.1	-3683281.0	1.8	0.9996296	0.0104993	-6617.3	3682255.0	2.0
34	0	1.0003675	-0.0105911	-32427.4	-3683653.5	2.4	0.9995201	0.0105829	-6569.0	3682230.3	2.3
33	45	1.0004950	-0.0106807	-32809.5	-3684094.1	2.4	0.9993909	0.0106697	-6515.5	3682202.0	2.5
33	30	1.0006390	-0.0107683	-33188.0	-3684596.0	3.2	0.9992452	0.0107543	-6458.2	3682171.5	3.3
33	15	1.0008021	-0.0108575	-33577.4	-3685159.5	3.0	0.9990802	0.0108398	-6396.1	3682135.8	3.3

[redacted] TABLE [redacted] OCS [redacted] CONVERSION [redacted] STATION [redacted] [redacted] [redacted] [redacted] [redacted] PAGE [redacted]

UTM ZONE: 14 LONGITUDES 100 DEGS 30 MINS TO 100 DEGS 45 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0008447	-0.0090868	-26605.1	-3686263.5	4.2	0.9990732	0.0090696	-6857.1	3683090.0	4.0
37	45	1.0006664	-0.0091821	-26940.0	-3685487.5	3.2	0.9992495	0.0091682	-6873.3	3682970.5	3.3
37	30	1.0005062	-0.0092772	-27277.9	-3684790.0	3.4	0.9994077	0.0092661	-6885.7	3682863.3	3.5
37	15	1.0003667	-0.0093752	-27632.3	-3684183.0	2.8	0.9995452	0.0093667	-6891.9	3682768.5	2.8
37	0	1.0002463	-0.0094723	-27987.7	-3683657.5	2.5	0.9996637	0.0094662	-6894.3	3682685.5	2.5
36	45	1.0001448	-0.0095709	-28352.4	-3683211.5	2.0	0.9997632	0.0095666	-6892.1	3682612.5	2.0
36	30	1.0000635	-0.0096690	-28720.6	-3682849.3	2.1	0.9998426	0.0096664	-6885.5	3682549.3	2.0
36	15	1.0000020	-0.0097668	-29091.4	-3682569.3	1.3	0.9999021	0.0097654	-6874.6	3682495.0	1.5
36	0	0.9999561	-0.0098671	-29475.3	-3682351.5	1.8	0.9999460	0.0098668	-6860.1	3682445.7	1.5
35	45	0.9999325	-0.0099671	-29862.9	-3682223.5	1.4	0.9999676	0.0099673	-6840.4	3682404.0	1.3
35	30	0.9999256	-0.0100668	-30252.4	-3682161.8	0.8	0.9999725	0.0100672	-6817.6	3682367.0	0.8
35	15	0.9999378	-0.0101685	-30653.7	-3682173.8	0.7	0.9999582	0.0101687	-6790.3	3682333.5	0.8
35	0	0.9999719	-0.0102697	-31058.0	-3682270.2	1.3	0.9999221	0.0102694	-6758.2	3682304.2	1.5
34	45	1.0000219	-0.0103720	-31469.1	-3682426.3	1.7	0.9998698	0.0103707	-6722.9	3682275.5	1.5
34	30	1.0000907	-0.0104727	-31878.0	-3682653.0	2.2	0.9997990	0.0104701	-6684.1	3682248.5	1.6
34	15	1.0001795	-0.0105760	-32301.1	-3682952.3	2.0	0.9997081	0.0105716	-6640.6	3682220.8	2.0
34	0	1.0002879	-0.0106808	-32733.5	-3683322.5	2.5	0.9995975	0.0106740	-6593.0	3682191.5	2.3
33	45	1.0004119	-0.0107841	-33162.9	-3683748.0	2.8	0.9994715	0.0107747	-6542.8	3682160.5	2.8
33	30	1.0005566	-0.0108883	-33600.1	-3684246.2	3.0	0.9993248	0.0108758	-6488.1	3682125.8	2.8
33	15	1.0007192	-0.0109945	-34047.9	-3684805.5	3.2	0.9991602	0.0109784	-6430.1	3682086.5	3.3

TABLE D. OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 100 DEGS 45 MINS TO 101 DEGS 0 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0007638	-0.0089281	-25913.6	-3685979.0	4.0	0.9991568	0.0089127	-6964.4	3683104.5	4.0
37	45	1.0005820	-0.0090380	-26312.7	-3685185.3	3.7	0.9993364	0.0090258	-6970.5	3682979.2	3.8
37	30	1.0004239	-0.0091497	-26723.8	-3684494.3	3.5	0.9994921	0.0091404	-6970.8	3682870.0	3.3
37	15	1.0002824	-0.0092617	-27138.7	-3683875.8	2.6	0.9996315	0.0092549	-6968.4	3682771.5	2.8
37	0	1.0001613	-0.0093744	-27560.0	-3683343.8	2.9	0.9997503	0.0093699	-6961.8	3682685.3	2.5
36	45	1.0000591	-0.0094872	-27985.3	-3682892.8	2.0	0.9998502	0.0094847	-6951.9	3682609.3	2.3
36	30	0.9999758	-0.0096014	-28419.1	-3682519.3	2.3	0.9999314	0.0096004	-6938.4	3682542.0	2.3
36	15	0.9999123	-0.0097163	-28859.5	-3682227.5	1.9	0.9999926	0.0097166	-6921.0	3682483.5	2.0
36	0	0.9998686	-0.0098307	-29301.3	-3682016.2	1.8	1.0000341	0.0098321	-6900.4	3682432.8	1.5
35	45	0.9998417	-0.0099449	-29744.4	-3681873.3	0.8	1.0000588	0.0099469	-6877.3	3682387.8	1.0
35	30	0.9998355	-0.0100614	-30200.8	-3681810.5	0.8	1.0000626	0.0100637	-6849.8	3682347.5	0.8
35	15	0.9998484	-0.0101777	-30650.9	-3681822.8	1.3	1.0000472	0.0101798	-6819.3	3682311.8	1.2
35	0	0.9998805	-0.0102947	-31123.2	-3681908.2	1.3	1.0000129	0.0102963	-6785.4	3682278.8	1.5
34	45	0.9999300	-0.0104121	-31591.0	-3682060.0	1.4	0.9999609	0.0104126	-6749.0	3682247.3	1.2
34	30	0.9999995	-0.0105294	-32062.3	-3682286.3	1.9	0.9998869	0.0105287	-6709.1	3682217.3	2.0
34	15	1.0000862	-0.0106483	-32541.7	-3682575.3	2.3	0.9997997	0.0106459	-6666.5	3682186.8	2.5
34	0	1.0001913	-0.0107670	-33023.0	-3682930.5	2.1	0.9996922	0.0107622	-6621.2	3682154.8	2.3
33	45	1.0003171	-0.0108863	-33510.1	-3683360.3	2.7	0.9995638	0.0108789	-6572.2	3682121.0	3.0
33	30	1.0004612	-0.0110076	-34007.2	-3683853.5	3.1	0.9994172	0.0109971	-6520.6	3682083.3	3.3
33	15	1.0006231	-0.0111287	-34505.7	-3684408.0	3.3	0.9992529	0.0111145	-6466.4	3682041.5	3.5

TAB[illegible], OC[illegible]M C[illegible]SI[illegible]NST[illegible] PA[illegible]

UTM ZONE: 14 LONGITUDES 101 DEGS 0 MINS TO 101 DEGS 15 MINS

LATITUDE DEG	LATITUDE MIN	UTM TO OCS (O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	OCS TO UTM (S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	1.0006663	-0.0087684	-25214.8	-3685621.5	4.3	0.9992568	0.0087550	-7075.8	3683106.3	4.3
37	45	1.0004883	-0.0088934	-25682.0	-3684841.2	3.8	0.9994324	0.0088831	-7069.2	3682981.0	3.7
37	30	1.0003269	-0.0090208	-26160.8	-3684134.0	3.4	0.9995914	0.0090134	-7059.6	3682867.3	3.3
37	15	1.0001848	-0.0091473	-26638.3	-3683511.0	3.2	0.9997310	0.0091423	-7047.7	3682766.5	3.3
37	0	1.0000634	-0.0092754	-27125.9	-3682975.8	2.9	0.9998501	0.0092728	-7032.1	3682677.5	2.8
36	45	0.9999607	-0.0094037	-27616.4	-3682519.8	2.3	0.9999503	0.0094030	-7014.0	3682599.0	2.5
36	30	0.9998768	-0.0095321	-28109.6	-3682142.5	2.0	1.0000317	0.0095331	-6993.5	3682530.0	2.0
36	15	0.9998114	-0.0096618	-28610.2	-3681841.0	1.9	1.0000945	0.0096642	-6970.3	3682468.8	1.8
36	0	0.9997672	-0.0097928	-29118.9	-3681625.5	1.4	1.0001363	0.0097961	-6943.7	3682415.0	1.5
35	45	0.9997424	-0.0099232	-29627.9	-3681488.0	1.2	1.0001583	0.0099272	-6914.7	3682368.2	1.3
35	30	0.9997344	-0.0100546	-30141.8	-3681416.5	0.9	1.0001638	0.0100588	-6884.0	3682325.5	1.0
35	15	0.9997455	-0.0101853	-30655.9	-3681419.8	1.0	1.0001501	0.0101896	-6850.9	3682287.5	1.2
35	0	0.9997742	-0.0103187	-31181.8	-3681490.0	1.2	1.0001185	0.0103224	-6815.6	3682251.3	1.3
34	45	0.9998260	-0.0104521	-31711.2	-3681648.3	1.5	1.0000640	0.0104549	-6776.7	3682218.2	1.5
34	30	0.9998936	-0.0105841	-32236.3	-3681865.5	1.8	0.9999936	0.0105856	-6736.9	3682186.0	1.8
34	15	0.9999811	-0.0107196	-32777.0	-3682155.5	2.4	0.9999032	0.0107194	-6694.1	3682153.0	2.3
34	0	1.0000869	-0.0108548	-33318.3	-3682511.0	2.3	0.9997944	0.0108523	-6649.5	3682119.0	2.8
33	45	1.0002097	-0.0109892	-33857.8	-3682927.5	2.6	0.9996688	0.0109840	-6603.6	3682083.0	3.0
33	30	1.0003518	-0.0111259	-34408.2	-3683412.0	3.3	0.9995239	0.0111176	-6555.3	3682043.3	3.0
33	15	1.0005131	-0.0112629	-34961.6	-3683962.3	3.4	0.9993596	0.0112510	-6504.9	3681999.5	3.5

TABLE D. OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 14 LONGITUDES 101 DEGS 15 MINS TO 101 DEGS 30 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0005623	-0.0086093	-24514.3	-3685234.0	3.8	0.9993634	0.0085970	-7187.4	3683101.5	4.3
37	45	1.0003796	-0.0087485	-25047.5	-3684432.2	3.7	0.9995434	0.0087403	-7170.6	3682972.0	3.7
37	30	1.0002179	-0.0088904	-25590.1	-3683722.2	3.3	0.9997025	0.0088850	-7150.5	3682856.7	3.3
37	15	1.0000769	-0.0090341	-26142.3	-3683101.5	2.8	0.9998409	0.0090312	-7127.6	3682754.3	3.0
37	0	0.9999535	-0.0091773	-26693.7	-3682556.0	3.2	0.9999615	0.0091766	-7103.5	3682662.8	3.0
36	45	0.9998491	-0.0093205	-27246.6	-3682092.0	2.6	1.0000633	0.0093219	-7077.8	3682582.0	2.8
36	30	0.9997649	-0.0094643	-27804.1	-3681711.5	2.6	1.0001448	0.0094674	-7049.9	3682511.3	2.3
36	15	0.9997005	-0.0096076	-28361.0	-3681413.5	1.9	1.0002065	0.0096121	-7020.3	3682449.2	2.0
36	0	0.9996530	-0.0097550	-28935.7	-3681183.0	1.6	1.0002511	0.0097606	-6988.5	3682392.8	1.8
35	45	0.9996252	-0.0099008	-29504.9	-3681032.2	1.1	1.0002760	0.0099071	-6955.6	3682343.5	1.5
35	30	0.9996181	-0.0100467	-30076.9	-3680963.0	1.0	1.0002801	0.0100533	-6920.5	3682300.0	1.3
35	15	0.9996303	-0.0101944	-30657.2	-3680968.5	1.1	1.0002651	0.0102009	-6883.6	3682260.3	1.2
35	0	0.9996585	-0.0103406	-31232.0	-3681036.8	1.3	1.0002338	0.0103467	-6846.4	3682223.5	1.5
34	45	0.9997070	-0.0104914	-31826.4	-3681180.5	1.8	1.0001819	0.0104966	-6806.7	3682187.8	1.5
34	30	0.9997743	-0.0106395	-32411.4	-3681395.0	1.9	1.0001116	0.0106435	-6766.1	3682154.3	2.3
34	15	0.9998600	-0.0107906	-33009.0	-3681676.5	2.2	1.0000225	0.0107929	-6724.1	3682119.5	2.3
34	0	0.9999641	-0.0109401	-33601.2	-3682025.7	2.8	0.9999152	0.0109403	-6681.1	3682084.5	2.8
33	45	1.0000877	-0.0110910	-34200.1	-3682444.0	3.2	0.9997883	0.0110885	-6636.7	3682047.0	3.0
33	30	1.0002295	-0.0112438	-34806.8	-3682925.3	3.2	0.9996433	0.0112381	-6591.2	3682006.0	3.3
33	15	1.0003891	-0.0113974	-35416.9	-3683468.0	3.3	0.9994804	0.0113881	-6545.0	3681960.5	3.5

TABLE D. OCS-UTM CONVERSION CONSTANTS PAGE 4

UTM ZONE: 14 LONGITUDES 101 DEGS 30 MINS TO 101 DEGS 45 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0004425	-0.0084477	-23809.2	-3684776.5	3.8	0.9994857	0.0084387	-7301.4	3683085.5	4.0
37	45	1.0002604	-0.0086039	-24413.8	-3683975.5	3.8	0.9996650	0.0085979	-7272.5	3682954.5	4.0
37	30	1.0000976	-0.0087600	-25018.9	-3683260.5	3.5	0.9998249	0.0087568	-7242.4	3682838.0	3.5
37	15	0.9999542	-0.0089185	-25634.6	-3682628.5	3.4	0.9999654	0.0089178	-7210.2	3682733.5	3.5
37	0	0.9998307	-0.0090760	-26247.5	-3682082.7	2.8	1.0000862	0.0090776	-7177.4	3682641.2	3.0
36	45	0.9997267	-0.0092349	-26867.0	-3681618.8	2.6	1.0001872	0.0092386	-7143.0	3682559.8	2.8
36	30	0.9996407	-0.0093947	-27490.6	-3681230.5	2.5	1.0002702	0.0094002	-7107.8	3682487.2	2.5
36	15	0.9995748	-0.0095551	-28117.6	-3680924.5	2.3	1.0003332	0.0095620	-7071.4	3682423.3	2.0
36	0	0.9995285	-0.0097150	-28743.0	-3680698.8	2.0	1.0003765	0.0097230	-7034.3	3682367.2	1.8
35	45	0.9995003	-0.0098760	-29373.6	-3680546.0	1.4	1.0004014	0.0098848	-6996.4	3682317.0	1.5
35	30	0.9994908	-0.0100386	-30010.6	-3680466.3	1.0	1.0004076	0.0100477	-6957.6	3682271.5	1.5
35	15	0.9994998	-0.0102010	-30647.2	-3680459.0	1.2	1.0003952	0.0102101	-6918.4	3682230.5	1.3
35	0	0.9995300	-0.0103636	-31285.7	-3680533.8	1.5	1.0003618	0.0103723	-6878.0	3682193.3	1.5
34	45	0.9995756	-0.0105289	-31934.0	-3680665.8	1.8	1.0003127	0.0105369	-6837.6	3682156.8	1.8
34	30	0.9996431	-0.0106935	-32580.7	-3680881.0	1.9	1.0002415	0.0107002	-6796.1	3682122.3	2.0
34	15	0.9997272	-0.0108595	-33232.6	-3681156.3	2.5	1.0001538	0.0108647	-6754.6	3682087.3	2.5
34	0	0.9998310	-0.0110257	-33885.5	-3681502.8	2.9	1.0000464	0.0110288	-6712.6	3682051.0	2.8
33	45	0.9999544	-0.0111932	-34543.5	-3681919.8	3.2	0.9999193	0.0111936	-6670.1	3682012.7	3.0
33	30	1.0000942	-0.0113603	-35199.4	-3682394.0	3.7	0.9997756	0.0113576	-6627.8	3681971.5	3.5
33	15	1.0002536	-0.0115292	-35862.6	-3682935.8	3.8	0.9996126	0.0115229	-6585.2	3681925.8	3.5

TABLE D. OCS-UTM CONVERSION CONSTANTS — PAGE 32
UTM ZONE: 14 LONGITUDES 101 DEGS 45 MINS TO 102 DEGS 0 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	1.0003121	-0.0082865	-23101.7	-3684270.3	4.4	0.9996187	0.0082798	-7416.1	3683060.0	4.3
37	45	1.0001297	-0.0084577	-23773.0	-3683468.3	4.1	0.9997981	0.0084540	-7375.5	3682929.0	3.7
37	30	0.9999661	-0.0086293	-24445.7	-3682749.3	3.7	0.9999586	0.0086283	-7334.7	3682811.3	3.5
37	15	0.9998212	-0.0088021	-25123.7	-3682111.0	3.8	1.0001005	0.0088038	-7293.3	3682705.8	3.5
37	0	0.9996960	-0.0089752	-25802.8	-3681558.0	3.2	1.0002226	0.0089792	-7251.5	3682612.7	3.3
36	45	0.9995906	-0.0091490	-26485.4	-3681088.3	2.9	1.0003250	0.0091551	-7209.2	3682530.3	3.0
36	30	0.9995045	-0.0093236	-27170.8	-3680699.2	2.5	1.0004078	0.0093316	-7166.6	3682457.5	2.5
36	15	0.9994369	-0.0094988	-27858.2	-3680386.8	2.2	1.0004721	0.0095083	-7124.0	3682393.2	2.3
36	0	0.9993884	-0.0096749	-28549.0	-3680152.0	2.1	1.0005172	0.0096855	-7081.3	3682336.0	2.0
35	45	0.9993594	-0.0098521	-29244.0	-3679995.5	1.9	1.0005428	0.0098635	-7038.4	3682285.2	1.8
35	30	0.9993498	-0.0100297	-29940.8	-3679915.7	1.3	1.0005488	0.0100417	-6995.5	3682240.0	1.3
35	15	0.9993587	-0.0102073	-30636.4	-3679908.3	1.3	1.0005363	0.0102193	-6953.0	3682199.0	1.2
35	0	0.9993865	-0.0103865	-31338.2	-3679973.5	1.6	1.0005047	0.0103982	-6910.4	3682160.8	1.5
34	45	0.9994332	-0.0105662	-32041.3	-3680110.2	2.1	1.0004542	0.0105773	-6868.3	3682125.0	2.0
34	30	0.9994979	-0.0107469	-32747.6	-3680314.5	2.5	1.0003855	0.0107569	-6826.6	3682090.0	2.5
34	15	0.9995811	-0.0109283	-33455.7	-3680586.5	2.6	1.0002983	0.0109366	-6785.4	3682054.8	2.5
34	0	0.9996842	-0.0111103	-34165.4	-3680931.0	3.0	1.0001913	0.0111166	-6744.5	3682019.0	3.0
33	45	0.9998046	-0.0112933	-34878.1	-3681336.8	2.9	1.0000668	0.0112970	-6704.5	3681980.7	3.3
33	30	0.9999444	-0.0114768	-35592.0	-3681811.5	3.5	0.9999227	0.0114775	-6664.9	3681939.5	3.5
33	15	1.0001026	-0.0116614	-36308.9	-3682349.5	3.9	0.9997601	0.0116584	-6626.0	3681894.0	3.7

UTM ZONE: 11 LONGITUDES 102 DEGS 0 MINS TO 102 DEGS 15 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(D)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	0.9971406	-0.0726548	-818692.2	-3617414.5	23.0	0.9977122	0.0726878	553735.2	3668063.0	26.8
37	45	0.9969763	-0.0724683	-817781.8	-3616887.0	22.3	0.9979005	0.0725283	553603.3	3668029.5	26.0
37	30	0.9968341	-0.0722799	-816885.0	-3616457.0	22.0	0.9980659	0.0723625	553478.5	3668012.2	25.8
37	15	0.9967103	-0.0720945	-816019.9	-3616104.0	21.5	0.9982136	0.0721974	553363.1	3668006.8	25.3
37	0	0.9966061	-0.0719101	-815178.6	-3615833.5	21.2	0.9983416	0.0720303	553256.2	3668013.5	24.5
36	45	0.9965231	-0.0717269	-814363.6	-3615651.0	20.5	0.9984472	0.0718611	553158.4	3668032.0	24.0
36	30	0.9964562	-0.0715436	-813565.2	-3615536.0	19.9	0.9985386	0.0716899	553068.1	3668058.5	23.5
36	15	0.9964083	-0.0713600	-812785.3	-3615500.0	19.5	0.9986106	0.0715158	552986.1	3668094.0	23.0
36	0	0.9963818	-0.0711808	-812044.0	-3615546.0	18.8	0.9986604	0.0713422	552914.5	3668137.3	22.5
35	45	0.9963720	-0.0709988	-811309.1	-3615661.0	18.7	0.9986939	0.0711632	552849.9	3668186.7	22.3
35	30	0.9963814	-0.0708189	-810602.4	-3615849.5	18.1	0.9987083	0.0709842	552794.6	3668241.5	21.5
35	15	0.9964091	-0.0706393	-809915.9	-3616108.7	17.8	0.9987043	0.0708023	552748.0	3668300.8	21.0
35	0	0.9964597	-0.0704609	-809256.6	-3616455.3	17.3	0.9986778	0.0706189	552711.1	3668363.8	20.8
34	45	0.9965242	-0.0702847	-808621.6	-3616851.5	16.7	0.9986373	0.0704362	552682.6	3668427.8	20.0
34	30	0.9966119	-0.0701067	-808002.3	-3617336.3	16.1	0.9985734	0.0702480	552663.5	3668494.3	19.5
34	15	0.9967125	-0.0699308	-807405.6	-3617865.0	15.9	0.9984965	0.0700597	552652.6	3668559.8	19.0
34	0	0.9968352	-0.0697548	-806830.7	-3618474.5	15.3	0.9983967	0.0698689	552651.6	3668624.8	18.5
33	45	0.9969767	-0.0695814	-806284.6	-3619148.2	14.9	0.9982793	0.0696775	552659.6	3668687.5	18.0
33	30	0.9971373	-0.0694077	-805757.5	-3619889.2	13.9	0.9981421	0.0694842	552677.1	3668747.5	17.3
33	15	0.9973145	-0.0692334	-805245.6	-3620686.8	13.9	0.9979897	0.0692874	552703.1	3668803.2	17.0

TABLE D. OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 13 LONGITUDES 102 DEGS 15 MINS TO 102 DEGS 30 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	(O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	(S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	0.9972925	-0.0725038	-818186.3	-3618170.0	22.3	0.9975809	0.0725171	553694.9	3668175.5	26.3
37	45	0.9971277	-0.0723310	-817336.3	-3617625.3	22.3	0.9977666	0.0723699	553573.8	3668136.3	25.8
37	30	0.9969836	-0.0721592	-816510.6	-3617171.0	21.4	0.9979321	0.0722217	553460.9	3668111.3	25.3
37	15	0.9968628	-0.0719905	-815719.4	-3616814.0	21.3	0.9980750	0.0720724	553356.8	3668100.5	24.8
37	0	0.9967545	-0.0718189	-814930.6	-3616513.5	20.7	0.9982039	0.0719186	553257.9	3668099.8	24.0
36	45	0.9966671	-0.0716528	-814183.6	-3616296.2	20.4	0.9983132	0.0717671	553168.6	3668109.0	23.8
36	30	0.9966033	-0.0714831	-813444.1	-3616179.7	19.7	0.9983991	0.0716090	553086.2	3668130.7	23.3
36	15	0.9965540	-0.0713169	-812734.4	-3616120.3	19.2	0.9984693	0.0714515	553011.8	3668159.0	22.8
36	0	0.9965251	-0.0711516	-812047.5	-3616142.5	18.8	0.9985197	0.0712924	552945.4	3668195.0	22.3
35	45	0.9965156	-0.0709856	-811377.0	-3616242.5	18.2	0.9985508	0.0711299	552886.4	3668237.8	21.8
35	30	0.9965260	-0.0708211	-810731.4	-3616419.8	17.8	0.9985626	0.0709657	552835.7	3668286.0	21.3
35	15	0.9965554	-0.0706582	-810110.8	-3616669.3	17.4	0.9985551	0.0708004	552793.3	3668338.2	20.8
35	0	0.9965994	-0.0704944	-809502.6	-3616975.0	17.1	0.9985322	0.0706323	552757.9	3668393.2	20.3
34	45	0.9966683	-0.0703327	-808925.1	-3617373.5	16.5	0.9984951	0.0704634	552732.0	3668451.3	19.8
34	30	0.9967509	-0.0701723	-808367.0	-3617821.3	15.9	0.9984241	0.0702929	552713.3	3668509.5	19.3
34	15	0.9968539	-0.0700114	-807826.9	-3618344.0	15.3	0.9983426	0.0701199	552702.9	3668569.0	18.7
34	0	0.9969772	-0.0698518	-807311.7	-3618938.7	15.2	0.9982415	0.0699453	552701.1	3668625.5	18.3
33	45	0.9971162	-0.0696947	-806821.6	-3619587.2	14.7	0.9981237	0.0697703	552707.3	3668680.7	17.8
33	30	0.9972734	-0.0695361	-806344.4	-3620300.0	14.4	0.9979893	0.0695923	552721.3	3668733.2	17.3
33	15	0.9974501	-0.0693790	-805891.3	-3621078.8	14.0	0.9978337	0.0694122	552744.3	3668781.5	17.0

ABL OCS CO SION STA PAG

UTM ZONE: 13 LONGITUDES 102 DEGS 30 MINS TO 102 DEGS 45 MINS

LATITUDE DEG	MIN	UTM TO OCS (O)	(P)	(Q)	(R)	EST MAX ERROR (METERS)	OCS TO UTM (S)	(T)	(U)	(V)	EST MAX ERROR (METERS)
38	0	0.9974270	-0.0723538	-817668.3	-3618847.2	22.6	0.9974654	0.0723478	553648.9	3668275.3	26.0
37	45	0.9972662	-0.0721955	-816885.9	-3618305.8	22.0	0.9976461	0.0722159	553540.4	3668232.3	25.3
37	30	0.9971224	-0.0720391	-816128.0	-3617837.5	21.1	0.9978089	0.0720829	553438.8	3668202.0	24.5
37	15	0.9969955	-0.0718847	-815394.5	-3617441.5	20.7	0.9979547	0.0719483	553343.8	3668183.5	24.3
37	0	0.9968899	-0.0717306	-814681.4	-3617135.2	20.8	0.9980808	0.0718112	553255.3	3668176.8	24.0
36	45	0.9968049	-0.0715772	-813990.2	-3616915.5	19.8	0.9981845	0.0716724	553174.2	3668182.3	23.3
36	30	0.9967344	-0.0714248	-813317.5	-3616755.3	19.8	0.9982746	0.0715317	553099.2	3668195.3	23.0
36	15	0.9966872	-0.0712710	-812659.7	-3616691.5	19.0	0.9983414	0.0713871	553031.2	3668218.5	22.3
36	0	0.9966587	-0.0711225	-812041.1	-3616699.2	19.2	0.9983898	0.0712443	552971.3	3668248.2	22.0
35	45	0.9966495	-0.0709732	-811437.3	-3616785.0	18.0	0.9984181	0.0710989	552918.3	3668285.0	21.3
35	30	0.9966563	-0.0708219	-810841.1	-3616934.8	17.8	0.9984313	0.0709479	552870.8	3668326.5	21.0
35	15	0.9966846	-0.0706761	-810286.2	-3617163.5	17.2	0.9984218	0.0707999	552832.3	3668372.3	20.5
35	0	0.9967299	-0.0705265	-809732.6	-3617460.2	16.8	0.9983962	0.0706458	552799.5	3668421.2	20.0
34	45	0.9967944	-0.0703827	-809219.4	-3617825.5	16.5	0.9983518	0.0704947	552774.9	3668471.8	19.8
34	30	0.9968789	-0.0702370	-808717.4	-3618266.0	16.1	0.9982867	0.0703392	552757.5	3668524.0	19.0
34	15	0.9969836	-0.0700944	-808245.7	-3618778.5	15.8	0.9982019	0.0701838	552747.7	3668575.8	18.7
34	0	0.9971026	-0.0699496	-807780.4	-3619342.7	15.1	0.9981021	0.0700249	552744.5	3668626.8	18.0
33	45	0.9972417	-0.0698057	-807336.7	-3619978.2	14.6	0.9979830	0.0698633	552748.8	3668675.8	17.5
33	30	0.9973999	-0.0696633	-806916.7	-3620679.5	14.3	0.9978445	0.0697006	552760.7	3668721.5	17.3
33	15	0.9975772	-0.0695236	-806524.1	-3621443.8	14.2	0.9976869	0.0695381	552780.2	3668762.7	16.8

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9975560	-0.0722007	-817130.9	-3619500.5	21.9	0.9973572	0.0721781	553598.3	3668368.3	25.5
37	45	0.9973897	-0.0720601	-816422.4	-3618920.0	21.9	0.9975400	0.0720635	553502.1	3668317.5	25.0
37	30	0.9972630	-0.0719171	-815721.3	-3618427.3	21.1	0.9977042	0.0719439	553410.3	3668281.0	24.5
37	15	0.9971167	-0.0717775	-815052.2	-3618019.7	21.0	0.9978477	0.0718242	553325.4	3668257.5	24.3
37	0	0.9970121	-0.0716389	-814406.0	-3617703.5	20.2	0.9979689	0.0717027	553247.1	3668247.3	23.5
36	45	0.9969236	-0.0715002	-813774.1	-3617455.7	19.9	0.9980754	0.0715786	553173.8	3668245.7	23.0
36	30	0.9968590	-0.0713642	-813173.6	-3617305.2	19.0	0.9981568	0.0714544	553108.0	3668256.0	22.3
36	15	0.9968089	-0.0712263	-812579.3	-3617214.7	18.8	0.9982249	0.0713254	553046.4	3668272.5	22.0
36	0	0.9967780	-0.0710940	-812024.3	-3617198.5	18.3	0.9982725	0.0711989	552992.6	3668296.5	21.5
35	45	0.9967668	-0.0709586	-811474.4	-3617263.1	17.6	0.9983021	0.0710673	552943.9	3668327.0	21.3
35	30	0.9967774	-0.0708249	-810950.0	-3617412.0	17.5	0.9983083	0.0709337	552902.1	3668364.0	20.5
35	15	0.9968008	-0.0706934	-810446.7	-3617609.0	16.7	0.9983022	0.0708010	552866.1	3668403.3	20.0
35	0	0.9968494	-0.0705621	-809965.8	-3617902.0	16.6	0.9982716	0.0706646	552836.9	3668446.8	19.8
34	45	0.9969131	-0.0704326	-809505.5	-3618250.8	15.9	0.9982251	0.0705277	552813.9	3668491.8	19.5
34	30	0.9969934	-0.0703019	-809056.3	-3618661.0	15.8	0.9981620	0.0703873	552796.7	3668537.8	19.7
34	15	0.9970954	-0.0701748	-808639.1	-3619149.0	15.3	0.9980777	0.0702480	552786.6	3668583.7	19.3
34	0	0.9972158	-0.0700452	-808229.1	-3619705.0	14.9	0.9979759	0.0701033	552782.5	3668628.7	19.3
33	45	0.9973561	-0.0699174	-807843.4	-3620330.0	14.5	0.9978526	0.0699577	552785.4	3668672.0	17.5
33	30	0.9975129	-0.0697927	-807484.4	-3621010.3	14.0	0.9977133	0.0698131	552794.7	3668711.5	17.0
33	15	0.9976883	-0.0696658	-807133.8	-3621755.5	13.9	0.9975563	0.0696636	552810.4	3668747.2	16.8

UTM ZONE: 13 LONGITUDES 103 DEGS 0 MINS TO 103 DEGS 15 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[U]	[P]	[W]	[N]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9976683	-0.0720478	-816579.8	-3620079.0	21.8	0.9972644	0.0720100	553543.4	3668449.0	25.0
37	45	0.9975047	-0.0719230	-815943.1	-3619497.3	20.9	0.9974427	0.0719112	553459.8	3668395.2	24.5
37	30	0.9973600	-0.0717966	-815315.5	-3618998.3	20.4	0.9976030	0.0718081	553379.9	3668355.0	24.0
37	15	0.9972301	-0.0716706	-814702.9	-3618563.3	20.2	0.9977470	0.0717021	553304.3	3668326.3	23.5
37	0	0.9971228	-0.0715464	-814116.5	-3618223.5	19.8	0.9978707	0.0715953	553234.4	3668309.7	23.3
36	45	0.9970360	-0.0714263	-813563.8	-3617967.3	19.4	0.9979721	0.0714897	553171.3	3668304.5	22.5
36	30	0.9969643	-0.0713039	-813014.9	-3617775.0	19.1	0.9980593	0.0713789	553111.5	3668307.3	22.3
36	15	0.9969174	-0.0711846	-812498.8	-3617682.3	18.8	0.9981216	0.0712681	553058.3	3668320.3	22.0
36	0	0.9968842	-0.0710649	-811993.1	-3617645.5	18.3	0.9981700	0.0711550	553009.5	3668339.0	21.5
35	45	0.9968722	-0.0709440	-811500.5	-3617693.7	17.6	0.9981967	0.0710376	552965.8	3668365.5	20.8
35	30	0.9968804	-0.0708285	-811045.8	-3617818.0	17.4	0.9982042	0.0709228	552928.6	3668396.5	20.3
35	15	0.9969054	-0.0707094	-810591.8	-3618009.5	16.9	0.9981952	0.0708019	552895.4	3668431.5	20.0
35	0	0.9969511	-0.0705944	-810171.0	-3618277.5	16.5	0.9981645	0.0706820	552868.7	3668469.7	19.5
34	45	0.9970128	-0.0704806	-809768.4	-3618604.8	16.2	0.9981177	0.0705607	552847.3	3668509.5	19.3
34	30	0.9970962	-0.0703649	-809376.7	-3619014.2	15.7	0.9980499	0.0704357	552831.3	3668551.0	18.5
34	15	0.9971952	-0.0702538	-809016.1	-3619477.0	15.1	0.9979663	0.0703123	552820.9	3668591.8	18.3
34	0	0.9973162	-0.0701418	-808670.1	-3620020.0	14.8	0.9978609	0.0701845	552816.3	3668631.8	18.0
33	45	0.9974556	-0.0700316	-808346.4	-3620627.0	14.5	0.9977376	0.0700570	552817.3	3668669.5	17.5
33	30	0.9976102	-0.0699206	-808032.9	-3621286.7	14.4	0.9975985	0.0699259	552823.5	3668704.0	17.0
33	15	0.9977849	-0.0698108	-807740.9	-3622015.0	13.7	0.9974393	0.0697935	552835.7	3668734.5	16.5

TABLE D. OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 13 LONGITUDES 103 DEGS 15 MINS TO 103 DEGS 30 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9977732	-0.0716978	-816033.6	-3620622.8	21.8	0.9971793	0.0710465	553487.2	3668521.3	25.0
37	45	0.9976017	-0.0717839	-815441.1	-3619997.0	21.1	0.9973633	0.0717593	553412.8	3668460.8	24.3
37	30	0.9974565	-0.0716754	-814891.1	-3619481.8	20.6	0.9975216	0.0716732	553344.8	3668416.5	24.0
37	15	0.9973317	-0.0715642	-814345.6	-3619055.7	20.1	0.9976597	0.0715826	553279.9	3668386.0	23.3
37	0	0.9972203	-0.0714560	-813824.5	-3618686.2	19.3	0.9977834	0.0714917	553219.4	3668364.8	22.8
36	45	0.9971321	-0.0713493	-813327.4	-3618412.2	18.9	0.9978846	0.0713995	553163.9	3668355.3	22.3
36	30	0.9970634	-0.0712431	-812848.1	-3618219.3	18.6	0.9979665	0.0713046	553112.4	3668355.3	21.8
36	15	0.9970084	-0.0711366	-812378.9	-3618082.7	18.2	0.9980345	0.0712073	553064.4	3668362.0	21.5
36	0	0.9969792	-0.0710331	-811941.3	-3618048.5	18.0	0.9980775	0.0711097	553022.2	3668378.0	21.0
35	45	0.9969665	-0.0709309	-811522.9	-3618079.2	17.7	0.9981037	0.0710108	552984.3	3668399.3	20.8
35	30	0.9969717	-0.0708285	-811117.8	-3618180.5	17.4	0.9981114	0.0709093	552950.6	3668426.0	20.3
35	15	0.9969994	-0.0707279	-810737.0	-3618360.0	16.9	0.9980971	0.0708064	552921.8	3668457.5	19.8
35	0	0.9970406	-0.0706265	-810364.9	-3618607.0	16.0	0.9980688	0.0707013	552897.0	3668491.0	19.0
34	45	0.9971036	-0.0705277	-810019.9	-3618926.8	16.1	0.9980199	0.0705948	552877.1	3668526.7	19.0
34	30	0.9971851	-0.0704280	-809686.0	-3619315.8	15.3	0.9979518	0.0704856	552861.9	3668563.7	18.3
34	15	0.9972876	-0.0703329	-809386.1	-3619778.8	15.1	0.9978625	0.0703776	552851.9	3668600.5	18.0
34	0	0.9974030	-0.0702373	-809095.9	-3620287.3	14.6	0.9977604	0.0702670	552845.8	3668635.5	17.8
33	45	0.9975395	-0.0701428	-808825.4	-3620870.5	14.2	0.9976371	0.0701552	552844.9	3668668.8	17.3
33	30	0.9976969	-0.0700479	-808570.1	-3621527.5	13.8	0.9974928	0.0700398	552848.8	3668699.0	16.5
33	15	0.9978709	-0.0699540	-808332.1	-3622240.0	13.6	0.9973330	0.0699233	552857.3	3668724.7	16.3

[redacted] ABL[redacted] OCS[redacted] CO[redacted] SIO[redacted] STA[redacted] PAG[redacted]

UTM ZONE: 13 LONGITUDES 103 DEGS 30 MINS TO 103 DEGS 45 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9978592	-0.0717429	-815452.9	-3621086.8	20.7	0.9971127	0.0716816	553426.0	3668581.2	24.0
37	45	0.9976953	-0.0716469	-814943.5	-3620479.0	20.3	0.9972880	0.0716108	553364.7	3668520.5	23.8
37	30	0.9975446	-0.0715532	-814454.6	-3619928.5	20.3	0.9974487	0.0715397	553307.2	3668471.2	23.5
37	15	0.9974151	-0.0714567	-813970.3	-3619471.5	19.8	0.9975898	0.0714637	553251.6	3668435.5	23.0
37	0	0.9973074	-0.0713648	-813520.5	-3619104.5	19.4	0.9977082	0.0713887	553201.1	3668412.3	22.8
36	45	0.9972146	-0.0712721	-813079.8	-3618800.5	19.0	0.9978124	0.0713110	553153.2	3668398.0	22.0
36	30	0.9971437	-0.0711818	-812664.7	-3618586.2	18.7	0.9978942	0.0712322	553109.4	3668394.2	21.8
36	15	0.9970957	-0.0710920	-812268.1	-3618465.5	18.1	0.9979534	0.0711513	553069.3	3668400.3	21.0
36	0	0.9970604	-0.0710031	-811886.3	-3618395.3	17.6	0.9979994	0.0710687	553032.4	3668411.3	20.8
35	45	0.9970480	-0.0709158	-811527.0	-3618415.3	17.6	0.9980230	0.0709843	552999.3	3668429.5	20.5
35	30	0.9970521	-0.0708292	-811183.3	-3618500.0	16.9	0.9980302	0.0708988	552969.8	3668452.5	20.0
35	15	0.9970742	-0.0707428	-810853.8	-3618654.2	16.7	0.9980186	0.0708103	552943.8	3668479.5	19.5
35	0	0.9971191	-0.0706598	-810554.5	-3618893.5	16.2	0.9979855	0.0707232	552922.3	3668510.0	19.0
34	45	0.9971792	-0.0705743	-810257.2	-3619191.5	15.6	0.9979360	0.0706303	552903.6	3668542.2	18.5
34	30	0.9972616	-0.0704920	-809988.8	-3619570.7	15.4	0.9978653	0.0705379	552889.4	3668575.5	18.3
34	15	0.9973590	-0.0704132	-809745.4	-3620001.7	15.0	0.9977788	0.0704470	552879.0	3668608.3	17.8
34	0	0.9974780	-0.0703311	-809505.1	-3620513.8	14.2	0.9976708	0.0703498	552872.2	3668640.5	17.3
33	45	0.9976132	-0.0702528	-809291.8	-3621079.5	14.0	0.9975474	0.0702538	552869.3	3668669.8	17.0
33	30	0.9977665	-0.0701742	-809090.7	-3621708.8	13.7	0.9974059	0.0701556	552870.1	3668696.2	16.5
33	15	0.9979405	-0.0700981	-808914.1	-3622408.0	13.5	0.9972435	0.0700558	552875.1	3668718.3	16.3

TABLE D. OCS-UTM CONVERSION CONSTANTS
UTM ZONE: 11 LONGITUDES 103 DEGS 45 MINS TO 104 DEGS 0 MINS

LATITUDE		UTM TO OCS					OCS TO UTM				
DEG	MIN	[O]	[P]	[Q]	[R]	EST MAX ERROR (METERS)	[S]	[T]	[U]	[V]	EST MAX ERROR (METERS)
38	0	0.9979387	-0.0715906	-814876.1	-3621517.5	20.9	0.9970533	0.0715194	553363.6	3668633.0	23.8
37	45	0.9977689	-0.0715089	-814427.4	-3620874.5	20.5	0.9972314	0.0714632	553313.4	3668567.8	23.5
37	30	0.9976197	-0.0714296	-814002.8	-3620319.7	19.9	0.9973896	0.0714067	553266.6	3668516.8	23.0
37	15	0.9974903	-0.0713499	-813590.6	-3619851.0	19.3	0.9975274	0.0713473	553221.9	3668479.0	22.5
37	0	0.9973812	-0.0712714	-813197.3	-3619467.8	18.9	0.9976456	0.0712859	553179.8	3668452.8	22.0
36	45	0.9972891	-0.0711943	-812822.7	-3619155.3	18.9	0.9977468	0.0712227	553140.1	3668436.3	21.8
36	30	0.9972163	-0.0711191	-812468.9	-3618922.3	18.4	0.9978285	0.0711598	553104.0	3668429.3	21.5
36	15	0.9971626	-0.0710447	-812132.4	-3618766.3	17.9	0.9978907	0.0710961	553070.3	3668430.7	21.0
36	0	0.9971280	-0.0709717	-811815.4	-3618691.0	17.1	0.9979333	0.0710279	553039.7	3668440.0	20.3
35	45	0.9971141	-0.0709004	-811518.5	-3618690.3	16.9	0.9979570	0.0709593	553011.6	3668455.0	20.3
35	30	0.9971187	-0.0708282	-811231.6	-3618765.7	16.8	0.9979615	0.0708884	552986.3	3668475.7	19.5
35	15	0.9971430	-0.0707593	-810971.4	-3618916.5	16.2	0.9979467	0.0708171	552964.0	3668500.0	19.3
35	0	0.9971825	-0.0706905	-810723.1	-3619124.7	15.6	0.9979160	0.0707445	552944.5	3668527.3	18.5
34	45	0.9972444	-0.0706221	-810491.3	-3619416.8	15.3	0.9978638	0.0706695	552927.8	3668556.5	18.5
34	30	0.9973240	-0.0705556	-810279.7	-3619774.0	15.2	0.9977929	0.0705920	552914.1	3668587.0	18.0
34	15	0.9974204	-0.0704925	-810092.9	-3620190.2	14.6	0.9977058	0.0705167	552903.6	3668616.7	17.8
34	0	0.9975378	-0.0704263	-809908.7	-3620684.0	14.5	0.9975981	0.0704356	552895.6	3668645.7	17.3
33	45	0.9976726	-0.0703648	-809754.9	-3621236.3	14.0	0.9974719	0.0703564	552890.9	3668672.3	16.8
33	30	0.9978266	-0.0703011	-809605.8	-3621857.5	13.8	0.9973276	0.0702726	552889.0	3668695.8	16.5
33	15	0.9979980	-0.0702400	-809479.2	-3622536.2	13.5	0.9971649	0.0701886	552890.3	3668715.0	16.2

APPENDIX E

CONSTANTS FOR CONVERSION

Table E-1. Constants for Conversion to Local Tulsa Coordinates from OCS, and Vice Versa

x_o = 782,355
y_o = 306,038
W = 1609.113
X = -27.2444
u_o = - 482.844
v_o = - 198.366
Y = .621282 10^{-3}
Z = .010519 10^{-3}

Table E-2. Constants for Conversion to Local Oklahoma City Coordinates from OCS, and Vice Versa

x_o = 639,450
y_o = 236,495
W = 1609.341
X = 2.9925
u_o = -397.061
v_o = -147.693
Y = .62137 10^{-3}
Z = .00116 10^{-3}

APPENDIX F

OKLAHOMA COORDINATE SYSTEM (UNIZONE)
GRID CONSTRUCTION TABLES

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J] GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID			HORIZONTAL	
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
FOREMAN	33 37.5	94 30.0	925000.	0.338	1.142	39000.	1.479	0.795	1.640	22.743	18.999	19.027
ARKINDA	33 45.0	94 30.0	924000.	-0.499	0.304	52000.	0.069	-0.614	1.640	22.743	18.972	18.999
CERROGORDO	33 52.5	94 30.0	924000.	0.304	1.108	66000.	0.301	-0.381	1.640	22.744	18.944	18.972
CHAPEL HILL	34 0.0	94 30.0	923000.	-0.533	0.271	80000.	0.534	-0.147	1.640	22.744	18.916	18.944
DE QUEEN NW	34 7.5	94 30.0	923000.	0.271	1.075	94000.	0.768	0.087	1.640	22.745	18.888	18.916
-----	34 15.0	94 30.0	922000.	-0.567	0.237	108000.	1.002	0.323	1.640	22.745	18.861	18.888
-----	34 22.5	94 30.0	922000.	0.237	1.041	122000.	1.237	0.558	1.640	22.746	18.832	18.861
ZAFRA	34 30.0	94 30.0	921000.	-0.600	0.204	136000.	1.472	0.794	1.641	22.746	18.804	18.832
MOUNTAIN FORK	34 37.5	94 30.0	921000.	0.204	1.008	149000.	0.066	-0.611	1.641	22.747	18.776	18.804
LOVING	34 45.0	94 30.0	920000.	-0.634	0.170	163000.	0.301	-0.374	1.641	22.747	18.748	18.776
BATES	34 52.5	94 30.0	920000.	0.170	0.974	177000.	0.537	-0.138	1.641	22.748	18.719	18.748
HARTFORD	35 0.0	94 30.0	919000.	-0.667	0.137	191000.	0.772	0.098	1.641	22.748	18.691	18.719
HACKETT	35 7.5	94 30.0	919000.	0.137	0.941	205000.	1.007	0.335	1.641	22.749	18.662	18.691
SOUTH FORT SMIT	35 15.0	94 30.0	918000.	-0.701	0.103	219000.	1.242	0.571	1.641	22.749	18.633	18.662
FORT SMITH	35 22.5	94 30.0	918000.	0.103	0.907	233000.	1.476	0.806	1.641	22.750	18.605	18.633
UNIONTOWN	35 30.0	94 30.0	917000.	-0.735	0.070	246000.	0.069	-0.601	1.641	22.750	18.576	18.605
NATURAL DAM	35 37.5	94 30.0	917000.	0.070	0.874	260000.	0.302	-0.366	1.641	22.751	18.547	18.576
EVANSVILLE	35 45.0	94 30.0	916000.	-0.768	0.036	274000.	0.535	-0.133	1.641	22.751	18.518	18.547
-----	35 52.5	94 30.0	916000.	0.036	0.840	288000.	0.766	0.100	1.641	22.752	18.489	18.518
-----	36 0.0	94 30.0	915000.	-0.801	0.003	302000.	0.997	0.332	1.641	22.752	18.460	18.489
-----	36 7.5	94 30.0	915000.	0.003	0.807	316000.	1.227	0.563	1.640	22.753	18.430	18.460
-----	36 15.0	94 30.0	915000.	0.807	1.611	330000.	1.456	0.793	1.640	22.753	18.401	18.430
-----	36 22.5	94 30.0	914000.	-0.030	0.774	343000.	0.041	-0.621	1.640	22.753	18.371	18.401
-----	36 30.0	94 30.0	914000.	0.774	1.578	357000.	0.267	-0.394	1.640	22.754	18.342	18.371
-----	36 37.5	94 30.0	913000.	-0.063	0.741	371000.	0.492	-0.168	1.640	22.754	18.312	18.342
-----	36 45.0	94 30.0	913000.	0.741	1.545	385000.	0.714	0.056	1.640	22.755	18.282	18.312
-----	36 52.5	94 30.0	912000.	-0.096	0.709	399000.	0.935	0.278	1.640	22.755	18.252	18.282
TOM	37 0.0	94 30.0	912000.	0.709	1.513	413000.	1.155	0.498	1.640	22.756	18.223	18.252
BOKHOMA	33 37.5	94 37.5	913000.	-0.326	0.449	38000.	0.499	-0.162	1.640	22.743	18.999	19.027
GOODWATER	33 45.0	94 37.5	913000.	0.449	1.224	52000.	0.729	0.069	1.640	22.743	18.972	18.999
-----	33 52.5	94 37.5	912000.	-0.417	0.358	66000.	0.960	0.301	1.640	22.744	18.944	18.972
-----	34 0.0	94 37.5	912000.	0.358	1.133	80000.	1.192	0.534	1.640	22.744	18.916	18.944
-----	34 7.5	94 37.5	911000.	-0.508	0.267	94000.	1.425	0.768	1.640	22.745	18.888	18.916
-----	34 15.0	94 37.5	911000.	0.267	1.042	107000.	0.016	-0.639	1.640	22.745	18.860	18.888
-----	34 22.5	94 37.5	910000.	-0.599	0.176	121000.	0.250	-0.405	1.640	22.746	18.832	18.860
-----	34 30.0	94 37.5	910000.	0.176	0.951	135000.	0.484	-0.170	1.641	22.746	18.804	18.832
-----	34 37.5	94 37.5	909000.	-0.690	0.065	149000.	0.718	0.066	1.641	22.747	18.776	18.804
-----	34 45.0	94 37.5	909000.	0.085	0.860	163000.	0.953	0.301	1.641	22.747	18.748	18.776
-----	34 52.5	94 37.5	909000.	0.860	1.636	177000.	1.187	0.537	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J] GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)					
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	HORIZONTAL [N]BOTTOM
POTEAU EAST	35 0.0	94 37.5	908000.	-0.006	0.769	191000.	1.422	0.772	1.641	22.748	18.691	18.719
SPIRO	35 7.5	94 37.5	908000.	0.769	1.545	204000.	0.014	-0.635	1.641	22.749	18.662	18.691
FORT COFFEE	35 15.0	94 37.5	907000.	-0.097	0.678	218000.	0.248	-0.400	1.641	22.749	18.633	18.662
MULDROW	35 22.5	94 37.5	907000.	0.678	1.454	232000.	0.482	-0.165	1.641	22.750	18.605	18.633
NICUT	35 30.0	94 37.5	906000.	-0.188	0.587	246000.	0.715	0.069	1.641	22.750	18.576	18.605
BIG ROUND MTN	35 37.5	94 37.5	906000.	0.587	1.363	260000.	0.947	0.302	1.641	22.751	18.547	18.576
-----	35 45.0	94 37.5	905000.	-0.279	0.497	274000.	1.178	0.535	1.641	22.751	18.518	18.547
WESTVILLE	35 52.5	94 37.5	905000.	0.497	1.272	288000.	1.409	0.766	1.641	22.752	18.489	18.518
WATTS	36 0.0	94 37.5	904000.	-0.370	0.406	302000.	1.639	0.997	1.641	22.752	18.459	18.489
SILOAM SPRINGS	36 7.5	94 37.5	904000.	0.406	1.181	315000.	0.226	-0.414	1.640	22.753	18.430	18.459
CHEROKEE CITY	36 15.0	94 37.5	903000.	-0.460	0.315	329000.	0.454	-0.186	1.640	22.753	18.401	18.430
COLCORD NE	36 22.5	94 37.5	903000.	0.315	1.091	343000.	0.680	0.041	1.640	22.753	18.371	18.401
SOUTHWEST CITY	36 30.0	94 37.5	902000.	-0.550	0.225	357000.	0.905	0.267	1.640	22.754	18.342	18.371
TIFF CITY	36 37.5	94 37.5	902000.	0.225	1.000	371000.	1.128	0.492	1.640	22.754	18.312	18.342
SENECA	36 45.0	94 37.5	901000.	-0.641	0.135	385000.	1.350	0.714	1.640	22.755	18.282	18.312
RACINE	36 52.5	94 37.5	901000.	0.135	0.910	399000.	1.570	0.935	1.640	22.755	18.252	18.282
-----	37 0.0	94 37.5	900000.	-0.731	0.045	412000.	0.147	-0.486	1.640	22.756	18.223	18.252
DE KALB NW	33 37.5	94 45.0	902000.	0.651	1.397	38000.	1.135	0.499	1.640	22.743	18.999	19.027
HAWORTH	33 45.0	94 45.0	901000.	-0.244	0.503	52000.	1.364	0.729	1.640	22.743	18.972	18.999
SHULTS	33 52.5	94 45.0	901000.	0.503	1.249	66000.	1.595	0.960	1.640	22.744	18.944	18.972
-----	34 0.0	94 45.0	900000.	-0.392	0.355	79000.	0.184	-0.449	1.640	22.744	18.916	18.944
-----	34 7.5	94 45.0	900000.	0.355	1.101	93000.	0.416	-0.217	1.640	22.745	18.888	18.916
-----	34 15.0	94 45.0	899000.	-0.540	0.206	107000.	0.648	0.016	1.640	22.745	18.860	18.888
-----	34 22.5	94 45.0	899000.	0.206	0.953	121000.	0.881	0.250	1.640	22.746	18.832	18.860
-----	34 30.0	94 45.0	898000.	-0.688	0.058	135000.	1.114	0.484	1.641	22.746	18.804	18.832
-----	34 37.5	94 45.0	898000.	0.058	0.804	149000.	1.347	0.718	1.641	22.747	18.776	18.804
-----	34 45.0	94 45.0	898000.	0.804	1.551	163000.	1.581	0.953	1.641	22.747	18.748	18.776
-----	34 52.5	94 45.0	897000.	-0.090	0.656	176000.	0.173	-0.454	1.641	22.748	18.719	18.748
POTEAU WEST	35 0.0	94 45.0	897000.	0.656	1.403	190000.	0.406	-0.220	1.641	22.748	18.691	18.719
PANAMA	35 7.5	94 45.0	896000.	-0.239	0.508	204000.	0.639	0.014	1.641	22.749	18.662	18.691
MULDROW SW	35 15.0	94 45.0	896000.	0.508	1.254	218000.	0.872	0.248	1.641	22.749	18.634	18.662
GANS	35 22.5	94 45.0	895000.	-0.387	0.359	232000.	1.105	0.482	1.641	22.750	18.605	18.634
BRUSHY	35 30.0	94 45.0	895000.	0.359	1.106	246000.	1.337	0.715	1.641	22.750	18.576	18.605
GREASY	35 37.5	94 45.0	894000.	-0.536	0.211	260000.	1.568	0.947	1.641	22.751	18.547	18.576
STILWELL WEST	35 45.0	94 45.0	894000.	0.211	0.958	273000.	0.157	-0.463	1.641	22.751	18.518	18.547
CHRISTIE	35 52.5	94 45.0	893000.	-0.684	0.063	287000.	0.387	-0.232	1.641	22.752	18.489	18.518
CHANCE	36 0.0	94 45.0	893000.	0.063	0.810	301000.	0.616	-0.002	1.641	22.752	18.459	18.489
SILOAM SPRINGS	36 7.5	94 45.0	893000.	0.810	1.556	315000.	0.844	0.226	1.640	22.753	18.430	18.459
COLCORD	36 15.0	94 45.0	892000.	-0.085	0.662	329000.	1.070	0.454	1.640	22.753	18.401	18.430
SYCAMORE	36 22.5	94 45.0	892000.	0.662	1.408	343000.	1.296	0.680	1.640	22.753	18.371	18.401
DODGE	36 30.0	94 45.0	891000.	-0.233	0.514	357000.	1.520	0.905	1.640	22.754	18.342	18.371
CAYUGA	36 37.5	94 45.0	891000.	0.514	1.261	370000.	0.101	-0.513	1.640	22.754	18.312	18.342
WYANDOTTE	36 45.0	94 45.0	890000.	-0.380	0.366	384000.	0.322	-0.291	1.640	22.755	18.282	18.312
PEORIA	36 52.5	94 45.0	890000.	0.366	1.113	398000.	0.541	-0.071	1.640	22.755	18.253	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(U.T.M.ZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID				
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
------	37 0.0	94 45.0	889000.	-0.528	0.219	412000.	0.758	0.147	1.640	22.756	18.223	18.253
ENGLISH	33 37.5	94 52.5	890000.	-0.012	0.706	37000.	0.107	-0.506	1.640	22.743	18.999	19.027
IDABEL SE	33 45.0	94 52.5	890000.	0.706	1.424	51000.	0.335	-0.277	1.640	22.743	18.972	18.999
IDABEL	33 52.5	94 52.5	889000.	-0.217	0.501	65000.	0.564	-0.047	1.640	22.744	18.944	18.972
------	34 0.0	94 52.5	889000.	0.501	1.218	79000.	0.794	0.184	1.640	22.744	18.916	18.944
------	34 7.5	94 52.5	888000.	-0.423	0.295	93000.	1.025	0.416	1.640	22.745	18.889	18.916
------	34 15.0	94 52.5	888000.	0.295	1.013	107000.	1.256	0.648	1.640	22.745	18.861	18.889
LUDLOW	34 22.5	94 52.5	887000.	-0.629	0.089	121000.	1.488	0.881	1.640	22.746	18.832	18.861
MUSE	34 30.0	94 52.5	887000.	0.089	0.807	134000.	0.079	-0.527	1.641	22.746	18.804	18.832
LEFLORE SE	34 37.5	94 52.5	887000.	0.807	1.525	148000.	0.311	-0.294	1.641	22.747	18.776	18.804
SUMMERFIELD	34 45.0	94 52.5	886000.	-0.117	0.601	162000.	0.544	-0.061	1.641	22.747	18.748	18.776
POTATO PEAKS	34 52.5	94 52.5	886000.	0.601	1.319	176000.	0.776	0.173	1.641	22.748	18.719	18.748
BOKOSHE	35 0.0	94 52.5	885000.	-0.322	0.395	190000.	1.009	0.406	1.641	22.748	18.691	18.719
ROBERT S KERR D	35 7.5	94 52.5	885000.	0.395	1.113	204000.	1.241	0.639	1.641	22.749	18.662	18.691
SALLISAW	35 15.0	94 52.5	884000.	-0.528	0.190	218000.	1.473	0.872	1.641	22.749	18.633	18.662
MARBLE CITY	35 22.5	94 52.5	884000.	0.190	0.908	231000.	0.063	-0.537	1.641	22.750	18.605	18.633
BUNCH	35 30.0	94 52.5	884000.	0.908	1.625	245000.	0.294	-0.305	1.641	22.750	18.576	18.605
TAILHOLT	35 37.5	94 52.5	883000.	-0.016	0.702	259000.	0.525	-0.073	1.641	22.751	18.547	18.576
PROCTOR	35 45.0	94 52.5	883000.	0.702	1.420	273000.	0.754	0.157	1.641	22.751	18.518	18.547
CHEWEY	35 52.5	94 52.5	882000.	-0.222	0.496	287000.	0.983	0.387	1.641	22.752	18.489	18.518
KANSAS	36 0.0	94 52.5	882000.	0.496	1.214	301000.	1.211	0.616	1.641	22.752	18.460	18.489
LAKE EUCHA EAST	36 7.5	94 52.5	881000.	-0.427	0.291	315000.	1.438	0.844	1.640	22.753	18.430	18.460
JAY	36 15.0	94 52.5	881000.	0.291	1.009	328000.	0.022	-0.571	1.640	22.753	18.401	18.430
GROVE	36 22.5	94 52.5	880000.	-0.632	0.086	342000.	0.247	-0.346	1.640	22.753	18.371	18.401
AFTON NE	36 30.0	94 52.5	880000.	0.086	0.803	356000.	0.470	-0.122	1.640	22.754	18.342	18.371
MIAMI SE	36 37.5	94 52.5	880000.	0.803	1.521	370000.	0.691	0.101	1.640	22.754	18.312	18.342
PICHER	36 45.0	94 52.5	879000.	-0.119	0.598	384000.	0.911	0.322	1.640	22.755	18.282	18.312
------	36 52.5	94 52.5	879000.	0.598	1.316	398000.	1.129	0.541	1.640	22.755	18.252	18.282
------	37 0.0	94 52.5	878000.	-0.324	0.394	412000.	1.345	0.758	1.640	22.756	18.223	18.252
ACWORTH	33 37.5	95 0.0	878000.	-0.673	0.016	37000.	0.695	0.107	1.640	22.743	18.999	19.027
GARVIN	33 45.0	95 0.0	878000.	0.016	0.705	51000.	0.922	0.335	1.640	22.743	18.972	18.999
------	33 52.5	95 0.0	878000.	0.705	1.394	65000.	1.151	0.564	1.640	22.744	18.944	18.972
------	34 0.0	95 0.0	877000.	-0.247	0.442	79000.	1.380	0.794	1.640	22.744	18.916	18.944
------	34 7.5	95 0.0	877000.	0.442	1.131	93000.	1.610	1.025	1.640	22.745	18.888	18.916
------	34 15.0	95 0.0	876000.	-0.510	0.178	106000.	0.199	-0.385	1.640	22.745	18.860	18.888
HONOBIA	34 22.5	95 0.0	876000.	0.178	0.868	120000.	0.430	-0.153	1.640	22.746	18.832	18.860
WHITESBORO	34 30.0	95 0.0	876000.	0.868	1.557	134000.	0.661	0.079	1.641	22.746	18.804	18.832
BLACKJACK RIDGE	34 37.5	95 0.0	875000.	-0.085	0.604	148000.	0.893	0.311	1.641	22.747	18.776	18.804
LEFLORE	34 45.0	95 0.0	875000.	0.604	1.293	162000.	1.124	0.544	1.641	22.747	18.748	18.776
	34 52.5	95 0.0	874000.	-0.346	0.341	176000.	1.356	0.776	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION						1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
							DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		(K)MAP GRID			
	(B) LATITUDE		(C) LONGITUDE		(D) VALUE			(G) VALUE				INTERVAL	(L)	HORIZONTAL	
(A)NAME	(DEGS MINS)		(DEGS MINS)		(METERS)	(E)SW	(F)NW	(METERS)	(H)SW	(I)SE		(INCHES)	VERTICAL	(M)TOP	(N)BOTTOM
MC CURTAIN SW	35	0.0	95	0.0	874000.	0.341	1.030	190000.	1.588	1.009		1.641	22.748	18.691	18.719
MC CURTAIN	35	7.5	95	0.0	873000.	-0.611	0.078	203000.	0.178	-0.400		1.641	22.749	18.662	18.691
KEOTA	35	15.0	95	0.0	873000.	0.078	0.767	217000.	0.409	-0.169		1.641	22.749	18.634	18.662
VIAN	35	22.5	95	0.0	873000.	0.767	1.456	231000.	0.639	0.063		1.641	22.750	18.605	18.634
BLACKGUM	35	30.0	95	0.0	872000.	-0.185	0.504	245000.	0.869	0.294		1.641	22.750	18.576	18.605
COOKSON	35	37.5	95	0.0	872000.	0.504	1.193	259000.	1.099	0.525		1.641	22.751	18.547	18.576
PARK HILL	35	45.0	95	0.0	871000.	-0.448	0.241	273000.	1.328	0.754		1.641	22.751	18.518	18.547
TAHLEQUAH	35	52.5	95	0.0	871000.	0.241	0.930	287000.	1.556	0.983		1.641	22.752	18.489	18.518
MOODYS	36	0.0	95	0.0	871000.	0.930	1.619	300000.	0.141	-0.430		1.641	22.752	18.459	18.489
LEACH	36	7.5	95	0.0	870000.	-0.022	0.667	314000.	0.367	-0.203		1.640	22.753	18.430	18.459
LAKE EUCHA WEST	36	15.0	95	0.0	870000.	0.667	1.356	328000.	0.592	0.022		1.640	22.753	18.401	18.430
CHLOETA	36	22.5	95	0.0	869000.	-0.285	0.405	342000.	0.816	0.247		1.640	22.753	18.371	18.401
BENNICE	36	30.0	95	0.0	869000.	0.405	1.094	356000.	1.038	0.470		1.640	22.754	18.342	18.371
AFTON	36	37.5	95	0.0	868000.	-0.547	0.142	370000.	1.258	0.691		1.640	22.754	18.312	18.342
MIAMI SW	36	45.0	95	0.0	868000.	0.142	0.831	384000.	1.477	0.911		1.640	22.755	18.282	18.312
MIAMI NW	36	52.5	95	0.0	868000.	0.831	1.521	397000.	0.053	-0.512		1.640	22.755	18.252	18.282
-----	37	0.0	95	0.0	867000.	-0.120	0.569	411000.	0.269	-0.296		1.640	22.756	18.223	18.252
-----	33	37.5	95	7.5	867000.	0.306	0.967	37000.	1.259	0.695		1.640	22.743	18.999	19.027
NEGLEY	33	45.0	95	7.5	867000.	0.967	1.627	51000.	1.486	0.922		1.640	22.743	18.972	18.999
MILLERTON	33	52.5	95	7.5	866000.	-0.014	0.646	64000.	0.073	-0.490		1.640	22.744	18.944	18.972
WRIGHT CITY	34	0.0	95	7.5	866000.	0.646	1.307	78000.	0.301	-0.261		1.640	22.744	18.916	18.944
ALIKCHI	34	7.5	95	7.5	865000.	-0.334	0.326	92000.	0.530	-0.031		1.640	22.745	18.888	18.916
SIGNAL MTN	34	15.0	95	7.5	865000.	0.326	0.986	106000.	0.759	0.199		1.640	22.745	18.860	18.888
CLEBIT	34	22.5	95	7.5	864000.	-0.655	0.005	120000.	0.989	0.430		1.640	22.746	18.832	18.860
ALBION SE	34	30.0	95	7.5	864000.	0.005	0.666	134000.	1.220	0.661		1.641	22.746	18.804	18.832
ALBION	34	37.5	95	7.5	864000.	0.666	1.326	148000.	1.450	0.893		1.641	22.747	18.776	18.804
-----	34	45.0	95	7.5	863000.	-0.315	0.345	161000.	0.040	-0.517		1.641	22.747	18.748	18.776
-----	34	52.5	95	7.5	863000.	0.345	1.006	175000.	0.271	-0.285		1.641	22.748	18.719	18.748
LEQUIRE	35	0.0	95	7.5	862000.	-0.636	0.025	189000.	0.501	-0.054		1.641	22.748	18.691	18.719
LAFAYETTE	35	7.5	95	7.5	862000.	0.025	0.685	203000.	0.732	0.178		1.641	22.749	18.662	18.691
STIGLER EAST	35	15.0	95	7.5	862000.	0.685	1.345	217000.	0.962	0.409		1.641	22.749	18.633	18.662
STIGLER NE	35	22.5	95	7.5	861000.	-0.296	0.364	231000.	1.192	0.639		1.641	22.750	18.605	18.633
-----	35	30.0	95	7.5	861000.	0.364	1.025	245000.	1.421	0.869		1.641	22.750	18.576	18.605
-----	35	37.5	95	7.5	860000.	-0.617	0.044	258000.	0.009	-0.542		1.641	22.751	18.547	18.576
-----	35	45.0	95	7.5	860000.	0.044	0.704	272000.	0.237	-0.314		1.641	22.751	18.518	18.547
-----	35	52.5	95	7.5	860000.	0.704	1.365	286000.	0.464	-0.086		1.641	22.752	18.489	18.518
-----	36	0.0	95	7.5	859000.	-0.277	0.384	300000.	0.690	0.141		1.641	22.752	18.459	18.489
ROSE	36	7.5	95	7.5	859000.	0.384	1.044	314000.	0.915	0.367		1.640	22.752	18.430	18.459
SALINA SE	36	15.0	95	7.5	858000.	-0.597	0.064	328000.	1.139	0.592		1.640	22.753	18.401	18.430
SPAVINAW	36	22.5	95	7.5	858000.	0.064	0.724	342000.	1.361	0.816		1.640	22.753	18.371	18.401
KETCHUM	36	30.0	95	7.5	858000.	0.724	1.385	356000.	1.583	1.038		1.640	22.754	18.342	18.371
VINITA NE	36	37.5	95	7.5	857000.	-0.256	0.404	369000.	0.161	-0.383		1.640	22.754	18.312	18.342
WELCH SOUTH	36	45.0	95	7.5	857000.	0.404	1.065	383000.	0.379	-0.164		1.640	22.755	18.282	18.312
WELCH NORTH	36	52.5	95	7.5	856000.	-0.576	0.085	397000.	0.596	0.053		1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J] GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION				1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)						
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
*-----	37 0.0	95 7.5	856000.	0.085	0.745	411000.	0.810	0.269	1.640	22.756	18.223	18.252
*-----	33 37.5	95 15.0	855000.	-0.354	0.278	36000.	0.159	-0.381	1.640	22.743	18.999	19.027
*-----	33 45.0	95 15.0	855000.	0.278	0.909	50000.	0.385	-0.155	1.640	22.743	18.972	18.999
*KIOWATIA	33 52.5	95 15.0	855000.	0.909	1.541	64000.	0.611	0.073	1.640	22.743	18.944	18.972
*SWINK	34 0.0	95 15.0	854000.	-0.100	0.531	78000.	0.839	0.301	1.640	22.744	18.916	18.944
*SOBOL	34 7.5	95 15.0	854000.	0.531	1.163	92000.	1.067	0.530	1.640	22.744	18.888	18.916
*CANEY MTN	34 15.0	95 15.0	853000.	-0.478	0.154	106000.	1.296	0.759	1.640	22.745	18.861	18.888
*NASHOBA	34 22.5	95 15.0	853000.	0.154	0.785	120000.	1.525	0.989	1.640	22.745	18.832	18.861
*ALBION SW	34 30.0	95 15.0	853000.	0.785	1.417	133000.	0.113	-0.421	1.641	22.746	18.804	18.832
*KIAMICHI	34 37.5	95 15.0	852000.	-0.224	0.407	147000.	0.343	-0.191	1.641	22.747	18.776	18.804
*-----	34 45.0	95 15.0	852000.	0.407	1.039	161000.	0.573	0.040	1.641	22.747	18.748	18.776
*-----	34 52.5	95 15.0	851000.	-0.602	0.029	175000.	0.803	0.271	1.641	22.748	18.719	18.748
*KINTA	35 0.0	95 15.0	851000.	0.029	0.661	189000.	1.033	0.501	1.641	22.748	18.691	18.719
*SAN BOIS	35 7.5	95 15.0	851000.	0.661	1.292	203000.	1.263	0.732	1.641	22.749	18.662	18.691
*STIGLER WEST	35 15.0	95 15.0	850000.	-0.349	0.283	217000.	1.492	0.962	1.641	22.749	18.633	18.662
*HOLT MTN	35 22.5	95 15.0	850000.	0.283	0.915	230000.	0.080	-0.449	1.641	22.750	18.605	18.633
*-----	35 30.0	95 15.0	850000.	0.915	1.546	244000.	0.308	-0.220	1.641	22.750	18.576	18.605
*-----	35 37.5	95 15.0	849000.	-0.095	0.537	258000.	0.536	0.009	1.641	22.751	18.547	18.576
*-----	35 45.0	95 15.0	849000.	0.537	1.168	272000.	0.763	0.237	1.641	22.751	18.518	18.547
*-----	35 52.5	95 15.0	848000.	-0.473	0.159	286000.	0.989	0.464	1.641	22.752	18.489	18.518
*-----	36 0.0	95 15.0	848000.	0.159	0.791	300000.	1.215	0.690	1.641	22.752	18.459	18.489
*SALINA	36 7.5	95 15.0	848000.	0.791	1.422	314000.	1.439	0.915	1.640	22.753	18.430	18.459
*STRANG	36 15.0	95 15.0	847000.	-0.219	0.413	327000.	0.021	-0.502	1.640	22.753	18.401	18.430
*BIG CABIN	36 22.5	95 15.0	847000.	0.413	1.045	341000.	0.243	-0.280	1.640	22.753	18.371	18.401
*VINITA	36 30.0	95 15.0	846000.	-0.596	0.036	355000.	0.463	-0.059	1.640	22.754	18.342	18.371
*PYRAMID CORNERS	36 37.5	95 15.0	846000.	0.036	0.667	369000.	0.682	0.161	1.640	22.754	18.312	18.342
*WELCH NW	36 45.0	95 15.0	846000.	0.667	1.299	383000.	0.899	0.379	1.640	22.755	18.282	18.312
*-----	36 52.5	95 15.0	845000.	-0.342	0.290	397000.	1.115	0.596	1.640	22.755	18.253	18.282
*-----	37 0.0	95 15.0	845000.	0.290	0.922	411000.	1.329	0.810	1.640	22.756	18.223	18.253
*WOODLAND	33 37.5	95 22.5	844000.	0.627	1.230	36000.	0.675	0.159	1.640	22.743	18.999	19.027
*FROGVILLE	33 45.0	95 22.5	843000.	-0.411	0.192	50000.	0.900	0.385	1.640	22.743	18.972	18.999
*FT TOWSON	33 52.5	95 22.5	843000.	0.192	0.795	64000.	1.126	0.611	1.640	22.744	18.944	18.972
*SPENCERVILLE	34 0.0	95 22.5	843000.	0.795	1.398	78000.	1.353	0.839	1.640	22.744	18.916	18.944
*CLOUDY	34 7.5	95 22.5	842000.	-0.243	0.360	92000.	1.580	1.067	1.640	22.745	18.888	18.916
*WILDHORSE MTN	34 15.0	95 22.5	842000.	0.360	0.962	105000.	0.167	-0.345	1.640	22.745	18.860	18.888
*CLAYTON	34 22.5	95 22.5	842000.	0.962	1.565	119000.	0.396	-0.116	1.640	22.746	18.832	18.860
*YANUSH	34 30.0	95 22.5	841000.	-0.076	0.527	133000.	0.624	0.113	1.641	22.746	18.804	18.832
*DAMON	34 37.5	95 22.5	841000.	0.527	1.130	147000.	0.853	0.343	1.641	22.747	18.776	18.804
*WILBURTON	34 45.0	95 22.5	840000.	-0.511	0.092	161000.	1.083	0.573	1.641	22.747	18.748	18.776
	34 52.5	95 22.5	840000.	0.092	0.695	175000.	1.312	0.803	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID			MAP DIMENSIONS(INCHES)		
	[B]	[C]	[D]	DISPLACEMENT (INCHES)	[G]	DISPLACEMENT (INCHES)	[K]MAP GRID		HORIZONTAL		
[A]NAME	LATITUDE (DEGS MINS)	LONGITUDE (DEGS MINS)	VALUE (METERS)	[E]SW / [F]NW	VALUE (METERS)	[H]SW / [I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
QUINTON SOUTH	35 0.0	95 22.5	840000.	0.695 / 1.298	189000.	1.541 / 1.033	1.641	22.748	18.691	18.719
QUINTON NORTH	35 7.5	95 22.5	839000.	-0.344 / 0.259	202000.	0.129 / -0.379	1.641	22.749	18.662	18.691
POKUM	35 15.0	95 22.5	839000.	0.259 / 0.862	216000.	0.357 / -0.149	1.641	22.749	18.633	18.662
WARNER	35 22.5	95 22.5	839000.	0.862 / 1.465	230000.	0.585 / 0.080	1.641	22.750	18.605	18.633
-----	35 30.0	95 22.5	838000.	-0.176 / 0.427	244000.	0.813 / 0.308	1.641	22.750	18.576	18.605
-----	35 37.5	95 22.5	838000.	0.427 / 1.030	258000.	1.040 / 0.536	1.641	22.751	18.547	18.576
-----	35 45.0	95 22.5	838000.	1.030 / 1.633	272000.	1.266 / 0.763	1.641	22.751	18.518	18.547
-----	35 52.5	95 22.5	837000.	-0.008 / 0.595	286000.	1.492 / 0.989	1.641	22.752	18.489	18.518
ROCKY POINT	36 0.0	95 22.5	837000.	0.595 / 1.198	299000.	0.075 / -0.426	1.641	22.752	18.459	18.489
CHOUTEAU	36 7.5	95 22.5	836000.	-0.443 / 0.160	313000.	0.299 / -0.202	1.640	22.753	18.430	18.459
PRYOR	36 15.0	95 22.5	836000.	0.160 / 0.763	327000.	0.521 / 0.021	1.640	22.753	18.401	18.430
ADAIR	36 22.5	95 22.5	836000.	0.763 / 1.366	341000.	0.742 / 0.243	1.640	22.753	18.371	18.401
WHITE OAK	36 30.0	95 22.5	835000.	-0.275 / 0.328	355000.	0.962 / 0.463	1.640	22.754	18.342	18.371
ESTELLA	36 37.5	95 22.5	835000.	0.328 / 0.931	369000.	1.180 / 0.682	1.640	22.754	18.312	18.342
CENTRALIA	36 45.0	95 22.5	835000.	0.931 / 1.534	383000.	1.396 / 0.899	1.640	22.755	18.282	18.312
HOLLOW	36 52.5	95 22.5	834000.	-0.107 / 0.496	397000.	1.611 / 1.115	1.640	22.755	18.252	18.282
-----	37 0.0	95 22.5	834000.	0.496 / 1.099	410000.	0.183 / -0.312	1.640	22.756	18.223	18.252
-----	33 37.5	95 30.0	832000.	-0.032 / 0.542	36000.	1.167 / 0.675	1.640	22.743	18.999	19.027
SLATE SHOALS	33 45.0	95 30.0	832000.	0.542 / 1.116	50000.	1.392 / 0.900	1.640	22.743	18.972	18.999
SHOALS	33 52.5	95 30.0	831000.	-0.524 / 0.050	64000.	1.617 / 1.126	1.640	22.744	18.944	18.972
HUGO DAM	34 0.0	95 30.0	831000.	0.050 / 0.624	77000.	0.202 / -0.288	1.640	22.744	18.916	18.944
RATTAN	34 7.5	95 30.0	831000.	0.624 / 1.198	91000.	0.429 / -0.061	1.640	22.745	18.888	18.916
FINLEY	34 15.0	95 30.0	830000.	-0.443 / 0.131	105000.	0.656 / 0.167	1.640	22.745	18.861	18.888
SNOW	34 22.5	95 30.0	830000.	0.131 / 0.705	119000.	0.884 / 0.396	1.640	22.746	18.832	18.861
STANLEY	34 30.0	95 30.0	830000.	0.705 / 1.279	133000.	1.112 / 0.624	1.641	22.746	18.804	18.832
SARDIS	34 37.5	95 30.0	829000.	-0.362 / 0.212	147000.	1.340 / 0.853	1.641	22.747	18.776	18.804
HIGGINS	34 45.0	95 30.0	829000.	0.212 / 0.787	161000.	1.568 / 1.083	1.641	22.747	18.748	18.776
GOWEN	34 52.5	95 30.0	829000.	0.787 / 1.361	174000.	0.156 / -0.329	1.641	22.748	18.719	18.748
FEATHERSTON	35 0.0	95 30.0	828000.	-0.280 / 0.294	188000.	0.384 / -0.100	1.641	22.748	18.691	18.719
ENTERPRISE	35 7.5	95 30.0	828000.	0.294 / 0.868	202000.	0.612 / 0.129	1.641	22.749	18.662	18.691
TEXANNA	35 15.0	95 30.0	828000.	0.868 / 1.442	216000.	0.840 / 0.357	1.641	22.749	18.634	18.662
WARNER NW	35 22.5	95 30.0	827000.	-0.199 / 0.375	230000.	1.067 / 0.585	1.641	22.750	18.605	18.634
-----	35 30.0	95 30.0	827000.	0.375 / 0.950	244000.	1.294 / 0.813	1.641	22.750	18.576	18.605
-----	35 37.5	95 30.0	827000.	0.950 / 1.524	258000.	1.521 / 1.040	1.641	22.751	18.547	18.576
-----	35 45.0	95 30.0	826000.	-0.117 / 0.457	271000.	0.105 / -0.375	1.641	22.751	18.518	18.547
-----	35 52.5	95 30.0	826000.	0.457 / 1.031	285000.	0.330 / -0.149	1.641	22.752	18.489	18.518
NEODESHA	36 0.0	95 30.0	826000.	1.031 / 1.606	299000.	0.554 / 0.075	1.641	22.752	18.460	18.489
CHOUTEAU NW	36 7.5	95 30.0	825000.	-0.035 / 0.539	313000.	0.776 / 0.299	1.640	22.752	18.430	18.460
OSAGE HILLS	36 15.0	95 30.0	825000.	0.539 / 1.113	327000.	0.998 / 0.521	1.640	22.753	18.401	18.430
BUSHYHEAD	36 22.5	95 30.0	824000.	-0.528 / 0.046	341000.	1.218 / 0.742	1.640	22.753	18.371	18.401
CHELSEA	36 30.0	95 30.0	824000.	0.046 / 0.621	355000.	1.437 / 0.962	1.640	22.754	18.342	18.371
CHELSEA NW	36 37.5	95 30.0	824000.	0.621 / 1.195	368000.	0.013 / -0.461	1.640	22.754	18.312	18.342
SANDERS	36 45.0	95 30.0	823000.	-0.446 / 0.129	382000.	0.229 / -0.245	1.640	22.755	18.282	18.312
HAYRICK MOUND	36 52.5	95 30.0	823000.	0.129 / 0.703	396000.	0.443 / -0.030	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J] GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL		
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
-----	37 0.0	95 30.0	823000.	0.703	1.277	410000.	0.655	0.183	1.640	22.756	18.223	18.252
-----	33 37.5	95 37.5	821000.	0.950	1.496	36000.	1.636	1.167	1.640	22.743	18.999	19.027
-----	33 45.0	95 37.5	820000.	-0.145	0.400	49000.	0.219	-0.249	1.640	22.743	18.972	18.999
-----	33 52.5	95 37.5	820000.	0.400	0.946	63000.	0.443	-0.024	1.640	22.744	18.944	18.972
HUGO	34 0.0	95 37.5	820000.	0.946	1.491	77000.	0.668	0.202	1.640	22.744	18.916	18.944
ANTLERS EAST	34 7.5	95 37.5	819000.	-0.150	0.396	91000.	0.894	0.429	1.640	22.745	18.888	18.916
KOSOMA	34 15.0	95 37.5	819000.	0.396	0.941	105000.	1.121	0.656	1.640	22.745	18.860	18.888
DUNBAR	34 22.5	95 37.5	819000.	0.941	1.487	119000.	1.348	0.884	1.640	22.746	18.832	18.860
-----	34 30.0	95 37.5	818000.	-0.154	0.391	133000.	1.575	1.112	1.641	22.746	18.804	18.832
-----	34 37.5	95 37.5	818000.	0.391	0.937	146000.	0.162	-0.301	1.641	22.747	18.776	18.804
HARTSHORNE	34 45.0	95 37.5	818000.	0.937	1.482	160000.	0.389	-0.073	1.641	22.747	18.748	18.776
ADAMSON	34 52.5	95 37.5	817000.	-0.159	0.386	174000.	0.617	0.156	1.641	22.748	18.719	18.748
BLOCKER	35 0.0	95 37.5	817000.	0.386	0.932	188000.	0.845	0.384	1.641	22.748	18.691	18.719
LONGTOWN	35 7.5	95 37.5	817000.	0.932	1.478	202000.	1.072	0.612	1.641	22.749	18.662	18.691
EUFAULA	35 15.0	95 37.5	816000.	-0.164	0.382	216000.	1.299	0.840	1.641	22.749	18.633	18.662
CHECOTAH	35 22.5	95 37.5	816000.	0.382	0.927	230000.	1.526	1.067	1.641	22.750	18.605	18.633
WAINWRIGHT	35 30.0	95 37.5	816000.	0.927	1.473	243000.	0.111	-0.347	1.641	22.750	18.576	18.605
BELAND	35 37.5	95 37.5	815000.	-0.168	0.377	257000.	0.337	-0.121	1.641	22.751	18.547	18.576
TAFT	35 45.0	95 37.5	815000.	0.377	0.923	271000.	0.562	0.105	1.641	22.751	18.518	18.547
RED BIRD	35 52.5	95 37.5	815000.	0.923	1.468	285000.	0.786	0.330	1.641	22.752	18.489	18.518
CATOOSA SE	36 0.0	95 37.5	814000.	-0.173	0.373	299000.	1.009	0.554	1.641	22.752	18.459	18.489
INOLA	36 7.5	95 37.5	814000.	0.373	0.918	313000.	1.231	0.776	1.640	22.753	18.430	18.459
CLAREMORE	36 15.0	95 37.5	814000.	0.918	1.464	327000.	1.451	0.998	1.640	22.753	18.401	18.430
FOYIL	36 22.5	95 37.5	813000.	-0.177	0.369	340000.	0.030	-0.423	1.640	22.753	18.371	18.401
WINGANON	36 30.0	95 37.5	813000.	0.369	0.914	354000.	0.248	-0.204	1.640	22.754	18.342	18.371
NOWATA EAST	36 37.5	95 37.5	813000.	0.914	1.460	368000.	0.465	0.013	1.640	22.754	18.312	18.342
CHILDERS	36 45.0	95 37.5	812000.	-0.181	0.365	382000.	0.680	0.229	1.640	22.755	18.282	18.312
SOUTH COFFEYVIL	36 52.5	95 37.5	812000.	0.365	0.910	396000.	0.893	0.443	1.640	22.755	18.253	18.282
-----	37 0.0	95 37.5	812000.	0.910	1.456	410000.	1.105	0.655	1.640	22.756	18.223	18.253
-----	33 37.5	95 45.0	809000.	0.292	0.809	35000.	0.440	-0.005	1.640	22.743	18.999	19.027
-----	33 45.0	95 45.0	809000.	0.809	1.326	49000.	0.662	0.219	1.640	22.743	18.972	18.999
-----	33 52.5	95 45.0	808000.	-0.315	0.202	63000.	0.886	0.443	1.640	22.744	18.944	18.972
SOPER.	34 0.0	95 45.0	808000.	0.202	0.718	77000.	1.111	0.668	1.640	22.744	18.916	18.944
ANTLERS WEST	34 7.5	95 45.0	808000.	0.718	1.235	91000.	1.336	0.894	1.640	22.745	18.889	18.916
HOYERS	34 15.0	95 45.0	807000.	-0.405	0.111	105000.	1.562	1.121	1.640	22.745	18.861	18.889
JUMBO	34 22.5	95 45.0	807000.	0.111	0.628	116000.	0.147	-0.293	1.640	22.746	18.832	18.861
-----	34 30.0	95 45.0	807000.	0.628	1.145	132000.	0.374	-0.066	1.641	22.746	18.804	18.832
-----	34 37.5	95 45.0	806000.	-0.496	0.020	146000.	0.601	0.162	1.641	22.747	18.776	18.804
HARTSHORNE SW	34 45.0	95 45.0	806000.	0.020	0.537	160000.	0.828	0.389	1.641	22.747	18.748	18.776
KREBS	34 52.5	95 45.0	806000.	0.537	1.054	174000.	1.055	0.617	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL	
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
CROWDER	35 0.0	95 45.0	806000.	1.054	1.571	188000.	1.282	0.845	1.641	22.748	18.691	18.719
CANADIAN	35 7.5	95 45.0	805000.	-0.070	0.446	202000.	1.508	1.072	1.641	22.749	18.662	18.691
STIDHAM	35 15.0	95 45.0	805000.	0.446	0.963	215000.	0.094	-0.342	1.641	22.749	18.633	18.662
PIERCE	35 22.5	95 45.0	805000.	0.963	1.480	229000.	0.320	-0.115	1.641	22.750	18.605	18.633
COUNCIL HILL	35 30.0	95 45.0	804000.	-0.161	0.356	243000.	0.545	0.111	1.641	22.750	18.576	18.605
BOYNTON	35 37.5	95 45.0	804000.	0.356	0.872	257000.	0.770	0.337	1.641	22.751	18.547	18.576
HASKELL	35 45.0	95 45.0	804000.	0.872	1.389	271000.	0.994	0.562	1.641	22.751	18.518	18.547
COWETA	35 52.5	95 45.0	803000.	-0.252	0.265	285000.	1.218	0.786	1.641	22.752	18.489	18.518
OKMULGEE	36 0.0	95 45.0	803000.	0.265	0.782	299000.	1.440	1.009	1.641	22.752	18.460	18.489
CATOOSA	36 7.5	95 45.0	803000.	0.782	1.299	312000.	0.021	-0.410	1.640	22.753	18.430	18.460
SAGEEYAH	36 15.0	95 45.0	802000.	-0.342	0.175	326000.	0.241	-0.190	1.640	22.753	18.401	18.430
OOLOGAH	36 22.5	95 45.0	802000.	0.175	0.691	340000.	0.460	0.030	1.640	22.753	18.371	18.401
TALALA	36 30.0	95 45.0	802000.	0.691	1.208	354000.	0.677	0.248	1.640	22.754	18.342	18.371
NOWATA WEST	36 37.5	95 45.0	801000.	-0.432	0.084	368000.	0.893	0.465	1.640	22.754	18.312	18.342
DELAWARE	36 45.0	95 45.0	801000.	0.084	0.601	382000.	1.107	0.680	1.640	22.755	18.282	18.312
ELLIOTT	36 52.5	95 45.0	801000.	0.601	1.118	396000.	1.320	0.893	1.640	22.755	18.252	18.282
------	37 0.0	95 45.0	801000.	1.118	1.635	410000.	1.531	1.105	1.640	22.756	18.223	18.252
------	33 37.5	95 52.5	797000.	-0.365	0.123	35000.	0.860	0.440	1.640	22.743	18.999	19.027
------	33 45.0	95 52.5	797000.	0.123	0.611	49000.	1.082	0.662	1.640	22.743	18.972	18.999
------	33 52.5	95 52.5	797000.	0.611	1.099	63000.	1.305	0.886	1.640	22.744	18.944	18.972
BOSWELL	34 0.0	95 52.5	797000.	1.099	1.587	77000.	1.529	1.111	1.640	22.744	18.916	18.944
DARWIN	34 7.5	95 52.5	796000.	-0.054	0.434	90000.	0.113	-0.305	1.640	22.745	18.888	18.916
FARRIS	34 15.0	95 52.5	796000.	0.434	0.922	104000.	0.338	-0.079	1.640	22.745	18.860	18.888
LANE NE	34 22.5	95 52.5	796000.	0.922	1.410	118000.	0.564	0.147	1.640	22.746	18.832	18.860
------	34 30.0	95 52.5	795000.	-0.230	0.258	132000.	0.790	0.374	1.641	22.746	18.804	18.832
PITTSBURG	34 37.5	95 52.5	795000.	0.258	0.746	146000.	1.016	0.601	1.641	22.747	18.776	18.804
SAVANNA	34 45.0	95 52.5	795000.	0.746	1.234	160000.	1.242	0.828	1.641	22.747	18.748	18.776
MC ALESTER	34 52.5	95 52.5	794000.	-0.407	0.081	174000.	1.469	1.055	1.641	22.748	18.719	18.748
LAKE MC ALESTER	35 0.0	95 52.5	794000.	0.081	0.569	187000.	0.054	-0.359	1.641	22.748	18.691	18.719
INDIANOLA	35 7.5	95 52.5	794000.	0.569	1.057	201000.	0.280	-0.133	1.641	22.749	18.662	18.691
RAIFORD	35 15.0	95 52.5	794000.	1.057	1.545	215000.	0.506	0.094	1.641	22.749	18.633	18.662
HOFFMAN	35 22.5	95 52.5	793000.	-0.096	0.392	229000.	0.731	0.320	1.641	22.750	18.605	18.633
MORRIS	35 30.0	95 52.5	793000.	0.392	0.880	243000.	0.956	0.545	1.641	22.750	18.576	18.605
OKMULGEE NE	35 37.5	95 52.5	793000.	0.880	1.368	257000.	1.181	0.770	1.641	22.751	18.547	18.576
CONCHARTY MTN	35 45.0	95 52.5	792000.	-0.273	0.215	271000.	1.404	0.994	1.641	22.751	18.518	18.547
LEONARD	35 52.5	95 52.5	792000.	0.215	0.703	285000.	1.627	1.218	1.641	22.752	18.489	18.518
BROKEN ARROW	36 0.0	95 52.5	792000.	0.703	1.191	298000.	0.206	-0.201	1.641	22.752	18.459	18.489
MINGO	36 7.5	95 52.5	791000.	-0.450	0.039	312000.	0.428	0.021	1.640	22.753	18.430	18.459
COLLINSVILLE	36 15.0	95 52.5	791000.	0.039	0.527	326000.	0.648	0.241	1.640	22.753	18.401	18.430
COLLINS VILLE NE	36 22.5	95 52.5	791000.	0.527	1.015	340000.	0.866	0.460	1.640	22.753	18.371	18.401
------	36 30.0	95 52.5	791000.	1.015	1.503	354000.	1.083	0.677	1.640	22.754	18.342	18.371
OGLESBY	36 37.5	95 52.5	790000.	-0.138	0.350	368000.	1.298	0.893	1.640	22.754	18.312	18.342
BLUE MOUND	36 45.0	95 52.5	790000.	0.350	0.838	382000.	1.512	1.107	1.640	22.755	18.282	18.312
WANN	36 52.5	95 52.5	790000.	0.838	1.327	395000.	0.083	-0.321	1.640	22.755	18.253	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)	
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)				
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
*-----	37 0.0	95 52.5	789000.	-0.314	0.174	409000.	0.293	-0.110	1.640	22.756	18.223	18.253
*-----	33 37.5	96 0.0	786000.	0.619	1.078	35000.	1.256	0.860	1.640	22.743	18.999	19.027
*-----	33 45.0	96 0.0	786000.	1.078	1.537	49000.	1.477	1.082	1.640	22.743	18.972	18.999
*-----	33 52.5	96 0.0	785000.	-0.103	0.356	62000.	0.060	-0.335	1.640	22.744	18.944	18.972
*BOSWELL SW	34 0.0	96 0.0	785000.	0.356	0.815	76000.	0.283	-0.112	1.640	22.744	18.916	18.944
*BOSWELL NW	34 7.5	96 0.0	785000.	0.815	1.275	90000.	0.507	0.113	1.640	22.745	18.888	18.916
*LANE	34 15.0	96 0.0	784000.	-0.366	0.093	104000.	0.731	0.338	1.640	22.745	18.860	18.888
*LANE NW	34 22.5	96 0.0	784000.	0.093	0.553	118000.	0.956	0.564	1.640	22.746	18.832	18.860
*LIMESTONE GAP	34 30.0	96 0.0	784000.	0.553	1.012	132000.	1.182	0.790	1.641	22.746	18.804	18.832
*KIOWA	34 37.5	96 0.0	784000.	1.012	1.471	146000.	1.407	1.016	1.641	22.747	18.776	18.804
*MC ALESTER SW	34 45.0	96 0.0	783000.	-0.170	0.290	160000.	1.633	1.242	1.641	22.747	18.748	18.776
*HAYWOOD	34 52.5	96 0.0	783000.	0.290	0.749	173000.	0.218	-0.172	1.641	22.748	18.719	18.748
*SCIPIO	35 0.0	96 0.0	783000.	0.749	1.208	187000.	0.444	0.054	1.641	22.748	18.691	18.719
*HANNA	35 7.5	96 0.0	782000.	-0.433	0.027	201000.	0.669	0.280	1.641	22.749	18.662	18.691
*-----	35 15.0	96 0.0	782000.	0.027	0.486	215000.	0.894	0.506	1.641	22.749	18.633	18.662
*-----	35 22.5	96 0.0	782000.	0.486	0.945	229000.	1.119	0.731	1.641	22.750	18.605	18.633
*OKMULGEE SOUTH	35 30.0	96 0.0	782000.	0.945	1.405	243000.	1.344	0.956	1.641	22.750	18.576	18.605
*OKMULGEE NORTH	35 37.5	96 0.0	781000.	-0.236	0.223	257000.	1.567	1.181	1.641	22.751	18.547	18.576
*SPANISH PEAK	35 45.0	96 0.0	781000.	0.223	0.682	270000.	0.149	-0.237	1.641	22.751	18.518	18.547
*BIXBY	35 52.5	96 0.0	781000.	0.682	1.142	284000.	0.371	-0.014	1.641	22.752	18.489	18.518
*JENKS	36 0.0	96 0.0	781000.	1.142	1.601	298000.	0.593	0.208	1.641	22.752	18.460	18.489
*TULSA	36 7.5	96 0.0	780000.	-0.040	0.420	312000.	0.813	0.428	1.640	22.752	18.430	18.460
*SPERRY	36 15.0	96 0.0	780000.	0.420	0.879	326000.	1.032	0.648	1.640	22.753	18.401	18.430
*VERA	36 22.5	96 0.0	780000.	0.879	1.338	340000.	1.249	0.866	1.640	22.754	18.371	18.401
*RAMONA	36 30.0	96 0.0	779000.	-0.302	0.157	354000.	1.465	1.083	1.640	22.754	18.342	18.371
*BARTLESVILLE SO	36 37.5	96 0.0	779000.	0.157	0.617	367000.	0.039	-0.342	1.640	22.754	18.312	18.342
*BARTLESVILLE NO	36 45.0	96 0.0	779000.	0.617	1.076	381000.	0.253	-0.129	1.640	22.755	18.282	18.312
*COPAN	36 52.5	96 0.0	779000.	1.076	1.535	395000.	0.464	0.083	1.640	22.755	18.252	18.282
*-----	37 0.0	96 0.0	778000.	-0.105	0.355	409000.	0.673	0.293	1.640	22.756	18.223	18.252
*-----	33 37.5	96 7.5	774000.	-0.037	0.393	35000.	1.628	1.256	1.640	22.743	18.999	19.027
*-----	33 45.0	96 7.5	774000.	0.393	0.824	48000.	0.209	-0.163	1.640	22.743	18.972	18.999
*-----	33 52.5	96 7.5	774000.	0.824	1.254	62000.	0.431	0.060	1.640	22.744	18.944	18.972
*BENNINGTON NORT	34 0.0	96 7.5	773000.	-0.386	0.044	76000.	0.653	0.283	1.640	22.744	18.916	18.944
*BENTLEY	34 7.5	96 7.5	773000.	0.044	0.475	90000.	0.877	0.507	1.640	22.745	18.888	18.916
*BRUNO	34 15.0	96 7.5	773000.	0.475	0.906	104000.	1.101	0.731	1.640	22.745	18.861	18.888
*STRINGTOWN	34 22.5	96 7.5	773000.	0.906	1.336	118000.	1.325	0.956	1.640	22.746	18.832	18.861
*CUALGATE SE	34 30.0	96 7.5	772000.	-0.305	0.126	132000.	1.550	1.182	1.641	22.746	18.804	18.832
*WARDVILLE	34 37.5	96 7.5	772000.	0.126	0.557	145000.	0.134	-0.234	1.641	22.747	18.776	18.804
*ASHLAND	34 45.0	96 7.5	772000.	0.557	0.987	159000.	0.359	-0.008	1.641	22.747	18.748	18.776
*STUART	34 52.5	96 7.5	772000.	0.987	1.418	173000.	0.585	0.218	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		(K)MAP GRID				
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [A]TOP	[N]BOTTOM
WETUMKA SE	35 0.0	96 7.5	771000.	-0.223	0.207	187000.	0.810	0.444	1.641	22.748	18.691	18.719
CARSON	35 7.5	96 7.5	771000.	0.207	0.638	201000.	1.035	0.669	1.641	22.749	18.662	18.691
DUSTIN	35 15.0	96 7.5	771000.	0.638	1.069	215000.	1.259	0.894	1.641	22.749	18.634	18.662
PHARUAH	35 22.5	96 7.5	771000.	1.069	1.499	229000.	1.484	1.119	1.641	22.750	18.605	18.634
-----	35 30.0	96 7.5	770000.	-0.142	0.289	242000.	0.067	-0.297	1.641	22.750	18.576	18.605
-----	35 37.5	96 7.5	770000.	0.289	0.720	256000.	0.290	-0.074	1.641	22.751	18.547	18.576
-----	35 45.0	96 7.5	770000.	0.720	1.150	270000.	0.512	0.149	1.641	22.751	18.518	18.547
SAPULPA SOUTH	35 52.5	96 7.5	770000.	1.150	1.581	284000.	0.734	0.371	1.641	22.752	18.489	18.518
SAPULPA NORTH	36 0.0	96 7.5	769000.	-0.060	0.371	298000.	0.954	0.593	1.641	22.752	18.459	18.489
SAND SPRINGS	36 7.5	96 7.5	769000.	0.371	0.801	312000.	1.174	0.813	1.640	22.753	18.430	18.459
AVANT SE	36 15.0	96 7.5	769000.	0.801	1.232	326000.	1.392	1.032	1.640	22.753	18.401	18.430
AVANT	36 22.5	96 7.5	768000.	-0.409	0.022	340000.	1.609	1.249	1.640	22.753	18.371	18.401
WOLCO	36 30.0	96 7.5	768000.	0.022	0.453	353000.	0.184	-0.175	1.640	22.754	18.342	18.371
WOODLAWN	36 37.5	96 7.5	768000.	0.453	0.883	367000.	0.398	0.039	1.640	22.754	18.312	18.342
BOWRING SE	36 45.0	96 7.5	768000.	0.883	1.314	381000.	0.611	0.253	1.640	22.755	18.282	18.312
BOWRING	36 52.5	96 7.5	767000.	-0.326	0.104	395000.	0.822	0.464	1.640	22.755	18.252	18.282
-----	37 0.0	96 7.5	767000.	0.104	0.535	409000.	1.030	0.673	1.640	22.756	18.223	18.252
-----	33 37.5	96 15.0	763000.	0.947	1.349	34000.	0.336	-0.012	1.640	22.743	19.000	19.027
-----	33 45.0	96 15.0	762000.	-0.291	0.111	48000.	0.556	0.209	1.640	22.743	18.972	19.000
-----	33 52.5	96 15.0	762000.	0.111	0.513	62000.	0.778	0.431	1.640	22.744	18.944	18.972
BOKCHITO	34 0.0	96 15.0	762000.	0.513	0.914	76000.	1.000	0.653	1.640	22.744	18.916	18.944
CANEY	34 7.5	96 15.0	762000.	0.914	1.316	90000.	1.223	0.877	1.640	22.745	18.888	18.916
TUSHKA	34 15.0	96 15.0	761000.	-0.324	0.078	104000.	1.446	1.101	1.640	22.745	18.860	18.888
LEHIGH	34 22.5	96 15.0	761000.	0.078	0.479	117000.	0.030	-0.315	1.640	22.746	18.832	18.860
COALGATE	34 30.0	96 15.0	761000.	0.479	0.881	131000.	0.254	-0.091	1.641	22.746	18.804	18.832
PARKER	34 37.5	96 15.0	761000.	0.881	1.283	145000.	0.478	0.134	1.641	22.747	18.776	18.804
-----	34 45.0	96 15.0	760000.	-0.358	0.044	159000.	0.703	0.359	1.641	22.747	18.748	18.776
CALVIN EAST	34 52.5	96 15.0	760000.	0.044	0.446	173000.	0.928	0.585	1.641	22.748	18.719	18.748
LAMAR	35 0.0	96 15.0	760000.	0.446	0.848	187000.	1.152	0.810	1.641	22.748	18.691	18.719
WETUMKA	35 7.5	96 15.0	760000.	0.848	1.250	201000.	1.377	1.035	1.641	22.749	18.662	18.691
WELEETKA	35 15.0	96 15.0	759000.	-0.391	0.011	215000.	1.601	1.259	1.641	22.749	18.633	18.662
CLEARVIEW	35 22.5	96 15.0	759000.	0.011	0.413	228000.	0.184	-0.157	1.641	22.750	18.605	18.633
-----	35 30.0	96 15.0	759000.	0.413	0.815	242000.	0.407	0.067	1.641	22.750	18.576	18.605
-----	35 37.5	96 15.0	759000.	0.815	1.217	256000.	0.630	0.290	1.641	22.751	18.547	18.576
-----	35 45.0	96 15.0	759000.	1.217	1.618	270000.	0.851	0.512	1.641	22.751	18.518	18.547
KELLYVILLE	35 52.5	96 15.0	758000.	-0.022	0.380	284000.	1.072	0.734	1.641	22.752	18.489	18.518
LAKE SAHOMA	36 0.0	96 15.0	758000.	0.380	0.782	298000.	1.292	0.954	1.641	22.752	18.459	18.489
WEKIWA	36 7.5	96 15.0	758000.	0.782	1.183	312000.	1.511	1.174	1.640	22.752	18.430	18.459
AVANT SW	36 15.0	96 15.0	758000.	1.183	1.585	325000.	0.088	-0.249	1.640	22.753	18.401	18.430
AVANT NW	36 22.5	96 15.0	757000.	-0.055	0.347	339000.	0.305	-0.032	1.640	22.753	18.371	18.401
BARNSDALL	36 30.0	96 15.0	757000.	0.347	0.749	353000.	0.520	0.184	1.640	22.754	18.342	18.371
NELAGONEY	36 37.5	96 15.0	757000.	0.749	1.151	367000.	0.734	0.398	1.640	22.754	18.312	18.342
HERD	36 45.0	96 15.0	757000.	1.151	1.553	381000.	0.946	0.611	1.640	22.755	18.282	18.312
-----	36 52.5	96 15.0	756000.	-0.088	0.314	395000.	1.156	0.822	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION					1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
					DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID INTERVAL		HORIZONTAL		
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	(INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
*-----	37 0.0	96 15.0	756000.	0.314	0.716	409000.	1.364	1.030	1.640	22.756	18.223	18.252
*-----	33 37.5	96 22.5	751000.	0.292	0.665	34000.	0.660	0.336	1.640	22.743	18.999	19.027
*-----	33 45.0	96 22.5	751000.	0.665	1.038	48000.	0.880	0.556	1.640	22.743	18.972	18.999
*-----	33 52.5	96 22.5	751000.	1.038	1.411	62000.	1.101	0.778	1.640	22.744	18.944	18.972
*CADDO SOUTH	34 0.0	96 22.5	750000.	-0.229	0.144	76000.	1.323	1.000	1.640	22.744	18.916	18.944
*CADDO NORTH	34 7.5	96 22.5	750000.	0.144	0.517	90000.	1.545	1.223	1.640	22.745	18.888	18.916
*BOGGY DEPOT	34 15.0	96 22.5	750000.	0.517	0.890	103000.	0.128	-0.194	1.640	22.745	18.860	18.888
*OLNEY	34 22.5	96 22.5	750000.	0.890	1.264	117000.	0.351	0.030	1.640	22.746	18.832	18.860
*CENTRAHOMA	34 30.0	96 22.5	750000.	1.264	1.637	131000.	0.575	0.254	1.641	22.746	18.804	18.832
*TUPELO NE	34 37.5	96 22.5	749000.	-0.004	0.369	145000.	0.799	0.478	1.641	22.747	18.776	18.804
*GERTY	34 45.0	96 22.5	749000.	0.369	0.742	159000.	1.023	0.703	1.641	22.747	18.748	18.776
*CALVIN WEST	34 52.5	96 22.5	749000.	0.742	1.116	173000.	1.247	0.928	1.641	22.748	18.719	18.748
*LAKE HOLDENVILL	35 0.0	96 22.5	749000.	1.116	1.489	187000.	1.471	1.152	1.641	22.748	18.691	18.719
*YEAGER	35 7.5	96 22.5	748000.	-0.152	0.221	200000.	0.054	-0.264	1.641	22.749	18.662	18.691
*OKEMAH SE	35 15.0	96 22.5	748000.	0.221	0.594	214000.	0.278	-0.040	1.641	22.749	18.633	18.662
*OKEMAH	35 22.5	96 22.5	748000.	0.594	0.968	228000.	0.501	0.184	1.641	22.750	18.605	18.633
*-----	35 30.0	96 22.5	748000.	0.968	1.341	242000.	0.724	0.407	1.641	22.750	18.576	18.605
*-----	35 37.5	96 22.5	747000.	-0.300	0.073	256000.	0.946	0.630	1.641	22.751	18.547	18.576
*-----	35 45.0	96 22.5	747000.	0.073	0.446	270000.	1.167	0.851	1.641	22.751	18.518	18.547
*LAKE HEYBURN	35 52.5	96 22.5	747000.	0.446	0.820	284000.	1.388	1.072	1.641	22.752	18.489	18.518
*MANNFORD SE	36 0.0	96 22.5	747000.	0.820	1.193	298000.	1.607	1.292	1.641	22.752	18.459	18.489
*KEYSTONE DAM	36 7.5	96 22.5	747000.	1.193	1.566	311000.	0.185	-0.129	1.640	22.753	18.430	18.459
*NEW PRUE	36 15.0	96 22.5	746000.	-0.075	0.298	325000.	0.402	0.088	1.640	22.753	18.401	18.430
*HOMINY NE	36 22.5	96 22.5	746000.	0.298	0.672	339000.	0.619	0.305	1.640	22.753	18.371	18.401
*WYNONA	36 30.0	96 22.5	746000.	0.672	1.045	353000.	0.833	0.520	1.640	22.754	18.342	18.371
*PAWHUSKA	36 37.5	96 22.5	746000.	1.045	1.418	367000.	1.046	0.734	1.640	22.754	18.312	18.342
*NANOS	36 45.0	96 22.5	745000.	-0.222	0.151	381000.	1.258	0.946	1.640	22.755	18.282	18.312
*-----	36 52.5	96 22.5	745000.	0.151	0.524	395000.	1.467	1.156	1.640	22.755	18.252	18.282
*-----	37 0.0	96 22.5	745000.	0.524	0.898	408000.	0.035	-0.276	1.640	22.756	18.223	18.252
*-----	33 37.5	96 30.0	740000.	1.277	1.622	34000.	0.960	0.660	1.640	22.743	18.999	19.027
*-----	33 45.0	96 30.0	739000.	-0.018	0.326	48000.	1.180	0.880	1.640	22.743	18.972	18.999
*-----	33 52.5	96 30.0	739000.	0.326	0.671	62000.	1.400	1.101	1.640	22.744	18.944	18.972
*DURANT NORTH	34 0.0	96 30.0	739000.	0.671	1.015	76000.	1.621	1.323	1.640	22.744	18.916	18.944
*CADDO NW	34 7.5	96 30.0	739000.	1.015	1.359	89000.	0.203	-0.095	1.640	22.745	18.888	18.916
*WAPANUCKA SOUTH	34 15.0	96 30.0	738000.	-0.281	0.063	103000.	0.425	0.128	1.640	22.745	18.860	18.888
*WAPANUCKA NORTH	34 22.5	96 30.0	738000.	0.063	0.408	117000.	0.648	0.351	1.640	22.746	18.832	18.860
*TUPELO	34 30.0	96 30.0	738000.	0.408	0.752	131000.	0.872	0.575	1.641	22.746	18.804	18.832
*LULA	34 37.5	96 30.0	738000.	0.752	1.097	145000.	1.095	0.799	1.641	22.747	18.776	18.804
*STEEDMAN	34 45.0	96 30.0	738000.	1.097	1.441	159000.	1.319	1.023	1.641	22.747	18.748	18.776
*ALLEN	34 52.5	96 30.0	737000.	-0.200	0.145	173000.	1.543	1.247	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID				
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	HORIZONTAL [N]BOTTOM
HOLDENVILLE	35 0.0	96 30.0	737000.	0.145	0.489	186000.	0.126	-0.170	1.641	22.748	18.691	18.719
WEWOKA EAST	35 7.5	96 30.0	737000.	0.489	0.834	200000.	0.349	0.054	1.641	22.749	18.662	18.691
CROMWELL	35 15.0	96 30.0	737000.	0.834	1.178	214000.	0.572	0.278	1.641	22.749	18.634	18.662
------	35 22.5	96 30.0	737000.	1.178	1.523	228000.	0.795	0.501	1.641	22.750	18.605	18.634
------	35 30.0	96 30.0	736000.	-0.118	0.226	242000.	1.017	0.724	1.641	22.750	18.576	18.605
------	35 37.5	96 30.0	736000.	0.226	0.571	256000.	1.239	0.946	1.641	22.751	18.547	18.576
------	35 45.0	96 30.0	736000.	0.571	0.915	270000.	1.460	1.167	1.641	22.751	18.518	18.547
BELLVUE	35 52.5	96 30.0	736000.	0.915	1.260	283000.	0.039	-0.253	1.641	22.752	18.489	18.518
OLIVE	36 0.0	96 30.0	736000.	1.260	1.604	297000.	0.258	-0.033	1.641	22.752	18.459	18.489
PERLTON	36 7.5	96 30.0	735000.	-0.036	0.308	311000.	0.476	0.185	1.640	22.752	18.430	18.459
CLEVELAND	36 15.0	96 30.0	735000.	0.308	0.653	325000.	0.693	0.402	1.640	22.753	18.401	18.430
HUMINY	36 22.5	96 30.0	735000.	0.653	0.997	339000.	0.909	0.619	1.640	22.753	18.371	18.401
------	36 30.0	96 30.0	735000.	0.997	1.342	353000.	1.123	0.833	1.640	22.754	18.342	18.371
------	36 37.5	96 30.0	734000.	-0.299	0.046	367000.	1.338	1.046	1.640	22.754	18.312	18.342
------	36 45.0	96 30.0	734000.	0.046	0.390	381000.	1.547	1.258	1.640	22.755	18.282	18.312
------	36 52.5	96 30.0	734000.	0.390	0.735	394000.	0.116	-0.173	1.640	22.755	18.252	18.282
------	37 0.0	96 30.0	734000.	0.735	1.079	408000.	0.323	0.035	1.640	22.756	18.223	18.252
------	33 37.5	96 37.5	728000.	0.623	0.939	34000.	1.236	0.960	1.640	22.743	18.999	19.027
DENISON DAM	33 45.0	96 37.5	728000.	0.939	1.254	48000.	1.455	1.180	1.640	22.743	18.972	18.999
------	33 52.5	96 37.5	728000.	1.254	1.570	61000.	0.035	-0.240	1.640	22.744	18.944	18.972
LITTLE CITY	34 0.0	96 37.5	727000.	-0.070	0.246	75000.	0.256	-0.019	1.640	22.744	18.916	18.944
MILBURN	34 7.5	96 37.5	727000.	0.246	0.561	89000.	0.477	0.203	1.640	22.745	18.888	18.916
CONNERVILLE SE	34 15.0	96 37.5	727000.	0.561	0.877	103000.	0.700	0.425	1.640	22.745	18.860	18.888
CONNERVILLE NE	34 22.5	96 37.5	727000.	0.877	1.193	117000.	0.922	0.648	1.640	22.746	18.832	18.860
HARDEN CITY	34 30.0	96 37.5	727000.	1.193	1.509	131000.	1.145	0.872	1.641	22.746	18.804	18.832
STONEWALL	34 37.5	96 37.5	726000.	-0.132	0.184	145000.	1.368	1.095	1.641	22.747	18.776	18.804
FRANCIS	34 45.0	96 37.5	726000.	0.184	0.499	159000.	1.591	1.319	1.641	22.747	18.748	18.776
SASAKWA	34 52.5	96 37.5	726000.	0.499	0.815	172000.	0.174	-0.098	1.641	22.748	18.719	18.748
TATE MTN	35 0.0	96 37.5	726000.	0.815	1.131	186000.	0.397	0.126	1.641	22.748	18.691	18.719
WEWOKA WEST	35 7.5	96 37.5	726000.	1.131	1.447	200000.	0.620	0.349	1.641	22.749	18.662	18.691
PRAGUE SE	35 15.0	96 37.5	725000.	-0.194	0.122	214000.	0.843	0.572	1.641	22.749	18.633	18.662
PRAGUE NE	35 22.5	96 37.5	725000.	0.122	0.437	228000.	1.065	0.795	1.641	22.750	18.605	18.633
------	35 30.0	96 37.5	725000.	0.437	0.753	242000.	1.287	1.017	1.641	22.750	18.576	18.605
------	35 37.5	96 37.5	725000.	0.753	1.069	256000.	1.508	1.239	1.641	22.751	18.547	18.576
------	35 45.0	96 37.5	725000.	1.069	1.385	269000.	0.088	-0.181	1.641	22.751	18.518	18.547
------	35 52.5	96 37.5	724000.	-0.256	0.060	283000.	0.308	0.039	1.641	22.752	18.489	18.518
------	36 0.0	96 37.5	724000.	0.060	0.376	297000.	0.527	0.258	1.641	22.752	18.460	18.489
------	36 7.5	96 37.5	724000.	0.376	0.691	311000.	0.744	0.476	1.640	22.753	18.430	18.460
------	36 15.0	96 37.5	724000.	0.691	1.007	325000.	0.961	0.693	1.640	22.753	18.401	18.430
------	36 22.5	96 37.5	724000.	1.007	1.323	339000.	1.176	0.909	1.640	22.753	18.371	18.401
------	36 30.0	96 37.5	724000.	1.323	1.639	353000.	1.389	1.123	1.640	22.754	18.342	18.371
------	36 37.5	96 37.5	723000.	-0.002	0.314	367000.	1.602	1.336	1.640	22.754	18.312	18.342
------	36 45.0	96 37.5	723000.	0.314	0.630	380000.	0.172	-0.094	1.640	22.755	18.282	18.312
------	36 52.5	96 37.5	723000.	0.630	0.946	394000.	0.381	0.116	1.640	22.755	18.253	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(OKIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)					
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
------	37 0.0	96 37.5	723000.	0.946	1.262	408000.	0.538	0.323	1.640	22.756	18.223	18.253
------	33 37.5	96 45.0	716000.	-0.031	0.256	34000.	1.488	1.236	1.640	22.743	18.999	19.027
------	33 45.0	96 45.0	716000.	0.256	0.543	47000.	0.067	-0.105	1.640	22.743	18.972	18.999
------	33 52.5	96 45.0	716000.	0.543	0.830	61000.	0.287	0.035	1.640	22.744	18.944	18.972
TISHOMINGO SW	34 0.0	96 45.0	716000.	0.830	1.117	75000.	0.507	0.256	1.640	22.744	18.916	18.944
TISHOMINGO	34 7.5	96 45.0	716000.	1.117	1.404	89000.	0.728	0.477	1.640	22.745	18.889	18.916
REAGAN	34 15.0	96 45.0	715000.	-0.236	0.051	103000.	0.950	0.700	1.640	22.745	18.861	18.889
CONNERVILLE	34 22.5	96 45.0	715000.	0.051	0.338	117000.	1.172	0.922	1.640	22.746	18.832	18.861
FITTSTOWN	34 30.0	96 45.0	715000.	0.338	0.625	131000.	1.395	1.145	1.641	22.746	18.804	18.832
AHLOSO	34 37.5	96 45.0	715000.	0.625	0.912	145000.	1.617	1.368	1.641	22.747	18.776	18.804
ADA	34 45.0	96 45.0	715000.	0.912	1.199	158000.	0.200	-0.049	1.641	22.747	18.748	18.776
VAMOOSA	34 52.5	96 45.0	715000.	1.199	1.486	172000.	0.422	0.174	1.641	22.748	18.719	18.748
WOLF	35 0.0	96 45.0	714000.	-0.155	0.132	186000.	0.645	0.397	1.641	22.748	18.691	18.719
SEMINOLE	35 7.5	96 45.0	714000.	0.132	0.419	200000.	0.868	0.620	1.641	22.749	18.662	18.691
PRAGUE SW	35 15.0	96 45.0	714000.	0.419	0.706	214000.	1.090	0.843	1.641	22.749	18.633	18.662
PRAGUE	35 22.5	96 45.0	714000.	0.706	0.993	228000.	1.312	1.065	1.641	22.750	18.605	18.633
------	35 30.0	96 45.0	714000.	0.993	1.280	242000.	1.534	1.287	1.641	22.750	18.576	18.605
------	35 37.5	96 45.0	714000.	1.280	1.567	255000.	0.114	-0.132	1.641	22.751	18.547	18.576
------	35 45.0	96 45.0	713000.	-0.073	0.214	269000.	0.334	0.088	1.641	22.751	18.518	18.547
------	35 52.5	96 45.0	713000.	0.214	0.501	283000.	0.553	0.308	1.641	22.752	18.489	18.518
------	36 0.0	96 45.0	713000.	0.501	0.788	297000.	0.771	0.527	1.641	22.752	18.459	18.489
------	36 7.5	96 45.0	713000.	0.788	1.075	311000.	0.989	0.744	1.640	22.752	18.430	18.459
------	36 15.0	96 45.0	713000.	1.075	1.362	325000.	1.205	0.961	1.640	22.753	18.401	18.430
------	36 22.5	96 45.0	712000.	-0.278	0.009	339000.	1.420	1.176	1.640	22.753	18.371	18.401
------	36 30.0	96 45.0	712000.	0.009	0.296	353000.	1.633	1.389	1.640	22.754	18.342	18.371
------	36 37.5	96 45.0	712000.	0.296	0.583	366000.	0.204	-0.039	1.640	22.754	18.312	18.342
SHIDLER	36 45.0	96 45.0	712000.	0.583	0.870	380000.	0.415	0.172	1.640	22.755	18.282	18.312
GRAINOLA	36 52.5	96 45.0	712000.	0.870	1.157	394000.	0.623	0.381	1.640	22.755	18.252	18.282
------	37 0.0	96 45.0	712000.	1.157	1.444	408000.	0.830	0.588	1.640	22.756	18.223	18.252
------	33 37.5	96 52.5	705000.	0.955	1.213	33000.	0.076	-0.152	1.640	22.743	18.999	19.027
------	33 45.0	96 52.5	705000.	1.213	1.472	47000.	0.295	0.067	1.640	22.743	18.972	18.999
------	33 52.5	96 52.5	704000.	-0.168	0.090	61000.	0.514	0.287	1.640	22.744	18.944	18.972
MADILL	34 0.0	96 52.5	704000.	0.090	0.348	75000.	0.734	0.507	1.640	22.744	18.916	18.944
RAVIA	34 7.5	96 52.5	704000.	0.348	0.607	89000.	0.955	0.728	1.640	22.745	18.888	18.916
TROY	34 15.0	96 52.5	704000.	0.607	0.865	103000.	1.176	0.950	1.640	22.745	18.860	18.888
MILL CREEK	34 22.5	96 52.5	704000.	0.865	1.123	117000.	1.398	1.172	1.640	22.746	18.832	18.860
ROFF SOUTH	34 30.0	96 52.5	704000.	1.123	1.382	131000.	1.620	1.395	1.641	22.746	18.804	18.832
ROFF NORTH	34 37.5	96 52.5	704000.	1.382	1.640	144000.	0.202	-0.023	1.641	22.747	18.776	18.804
VANOSS	34 45.0	96 52.5	703000.	-0.001	0.258	158000.	0.425	0.200	1.641	22.747	18.748	18.776
KONAWA	34 52.5	96 52.5	703000.	0.258	0.516	172000.	0.647	0.422	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)						
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
ST LOUIS	35 0.0	96 52.5	703000.	0.516	0.774	186000.	0.870	0.645	1.641	22.748	18.691	18.719
MAUD	35 7.5	96 52.5	703000.	0.774	1.033	200000.	1.092	0.868	1.641	22.749	18.662	18.691
EARLSBORO	35 15.0	96 52.5	703000.	1.033	1.291	214000.	1.314	1.090	1.641	22.749	18.633	18.662
SHAWNEE NE	35 22.5	96 52.5	703000.	1.291	1.549	228000.	1.536	1.312	1.641	22.750	18.605	18.633
------	35 30.0	96 52.5	702000.	-0.091	0.167	241000.	0.116	-0.107	1.641	22.750	18.576	18.605
------	35 37.5	96 52.5	702000.	0.167	0.425	255000.	0.337	0.114	1.641	22.751	18.547	18.576
------	35 45.0	96 52.5	702000.	0.425	0.684	269000.	0.556	0.334	1.641	22.751	18.518	18.547
------	35 52.5	96 52.5	702000.	0.684	0.942	283000.	0.775	0.553	1.641	22.752	18.489	18.518
------	36 0.0	96 52.5	702000.	0.942	1.200	297000.	0.993	0.771	1.641	22.752	18.460	18.489
------	36 7.5	96 52.5	702000.	1.200	1.459	311000.	1.210	0.989	1.640	22.753	18.430	18.460
------	36 15.0	96 52.5	701000.	-0.182	0.077	325000.	1.426	1.205	1.640	22.753	18.401	18.430
------	36 22.5	96 52.5	701000.	0.077	0.335	339000.	1.640	1.420	1.640	22.753	18.371	18.401
------	36 30.0	96 52.5	701000.	0.335	0.593	352000.	0.213	-0.008	1.640	22.754	18.342	18.371
CHARLEY CREEK NW	36 37.5	96 52.5	701000.	0.593	0.852	366000.	0.424	0.204	1.640	22.754	18.312	18.342
KAW CITY	36 45.0	96 52.5	701000.	0.852	1.110	380000.	0.634	0.415	1.640	22.755	18.282	18.312
HARDY	36 52.5	96 52.5	701000.	1.110	1.368	394000.	0.842	0.623	1.640	22.755	18.252	18.282
------	37 0.0	96 52.5	701000.	1.368	1.627	408000.	1.049	0.830	1.640	22.756	18.223	18.252
------	33 37.5	97 0.0	693000.	0.302	0.531	33000.	0.280	0.076	1.640	22.743	18.999	19.027
------	33 45.0	97 0.0	693000.	0.531	0.761	47000.	0.498	0.295	1.640	22.743	18.972	18.999
------	33 52.5	97 0.0	693000.	0.761	0.991	61000.	0.717	0.514	1.640	22.744	18.944	18.972
MC MILLAN	34 0.0	97 0.0	693000.	0.991	1.220	75000.	0.937	0.734	1.640	22.744	18.916	18.944
HANNSVILLE	34 7.5	97 0.0	693000.	1.220	1.450	89000.	1.158	0.955	1.640	22.745	18.888	18.916
NEBO	34 15.0	97 0.0	692000.	-0.191	0.039	103000.	1.379	1.176	1.640	22.745	18.860	18.888
SULPHUR SOUTH	34 22.5	97 0.0	692000.	0.039	0.269	117000.	1.600	1.398	1.640	22.746	18.832	18.860
SULPHUR NORTH	34 30.0	97 0.0	692000.	0.269	0.498	130000.	0.182	-0.020	1.641	22.746	18.804	18.832
HART	34 37.5	97 0.0	692000.	0.498	0.728	144000.	0.404	0.202	1.641	22.747	18.776	18.804
STRATFORD	34 45.0	97 0.0	692000.	0.728	0.958	158000.	0.626	0.425	1.641	22.747	18.748	18.776
ASHER	34 52.5	97 0.0	692000.	0.958	1.187	172000.	0.848	0.647	1.641	22.748	18.719	18.748
PEARSON	35 0.0	97 0.0	692000.	1.187	1.417	186000.	1.070	0.870	1.641	22.748	18.691	18.719
BROOKSVILLE	35 7.5	97 0.0	691000.	-0.224	0.006	200000.	1.292	1.092	1.641	22.749	18.662	18.691
SHAWNEE	35 15.0	97 0.0	691000.	0.006	0.235	214000.	1.514	1.314	1.641	22.749	18.633	18.662
AYDELOTTE	35 22.5	97 0.0	691000.	0.235	0.465	227000.	0.095	-0.105	1.641	22.750	18.605	18.633
------	35 30.0	97 0.0	691000.	0.465	0.695	241000.	0.316	0.116	1.641	22.750	18.576	18.605
------	35 37.5	97 0.0	691000.	0.695	0.924	255000.	0.536	0.337	1.641	22.751	18.547	18.576
------	35 45.0	97 0.0	691000.	0.924	1.154	269000.	0.755	0.556	1.641	22.751	18.518	18.547
------	35 52.5	97 0.0	691000.	1.154	1.384	283000.	0.974	0.775	1.641	22.752	18.489	18.518
------	36 0.0	97 0.0	691000.	1.384	1.613	297000.	1.191	0.993	1.641	22.752	18.459	18.489
------	36 7.5	97 0.0	690000.	-0.027	0.202	311000.	1.408	1.210	1.640	22.753	18.430	18.459
------	36 15.0	97 0.0	690000.	0.202	0.432	325000.	1.623	1.426	1.640	22.753	18.401	18.430
------	36 22.5	97 0.0	690000.	0.432	0.662	338000.	0.197	0.000	1.640	22.753	18.371	18.401
------	36 30.0	97 0.0	690000.	0.662	0.891	352000.	0.410	0.213	1.640	22.754	18.342	18.371
CHARLES CREEK	36 37.5	97 0.0	690000.	0.891	1.121	366000.	0.621	0.424	1.640	22.754	18.312	18.342
UNCAS	36 45.0	97 0.0	690000.	1.121	1.351	380000.	0.830	0.634	1.640	22.755	18.282	18.312
KAW CITY NW	36 52.5	97 0.0	690000.	1.351	1.580	394000.	1.038	0.842	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)					
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
------	37 0.0	97 0.0	689000.	-0.060	0.170	408000.	1.244	1.049	1.640	22.756	18.223	18.252
CALLISBURG	33 37.5	97 7.5	682000.	1.288	1.489	33000.	0.460	0.280	1.640	22.743	18.999	19.027
HORSESHOE BEND	33 45.0	97 7.5	681000.	-0.151	0.050	47000.	0.678	0.498	1.640	22.743	18.972	18.999
MARIETTA EAST	33 52.5	97 7.5	681000.	0.050	0.251	61000.	0.897	0.717	1.640	22.744	18.944	18.972
LAKE MURRAY	34 0.0	97 7.5	681000.	0.251	0.452	75000.	1.117	0.937	1.640	22.744	18.916	18.944
ARDMORE EAST	34 7.5	97 7.5	681000.	0.452	0.653	89000.	1.337	1.158	1.640	22.745	18.888	18.916
GENE AUTRY	34 15.0	97 7.5	681000.	0.653	0.854	103000.	1.558	1.379	1.640	22.745	18.861	18.888
DOUGHERTY	34 22.5	97 7.5	681000.	0.854	1.055	116000.	0.138	-0.040	1.640	22.746	18.832	18.861
DAVIS	34 30.0	97 7.5	681000.	1.055	1.256	130000.	0.360	0.182	1.641	22.746	18.804	18.832
PAULS VALLEY NE	34 37.5	97 7.5	681000.	1.256	1.457	144000.	0.582	0.404	1.641	22.747	18.776	18.804
BYARS	34 45.0	97 7.5	680000.	-0.184	0.017	158000.	0.804	0.626	1.641	22.747	18.748	18.776
WANETTE	34 52.5	97 7.5	680000.	0.017	0.218	172000.	1.026	0.848	1.641	22.748	18.719	18.748
TRIBBEY	35 0.0	97 7.5	680000.	0.218	0.419	186000.	1.248	1.070	1.641	22.748	18.691	18.719
MACOMB	35 7.5	97 7.5	680000.	0.419	0.620	200000.	1.469	1.292	1.641	22.749	18.662	18.691
SHAWNEE RESERVO	35 15.0	97 7.5	680000.	0.620	0.821	213000.	0.050	-0.127	1.641	22.749	18.633	18.662
MC LOUD	35 22.5	97 7.5	680000.	0.821	1.022	227000.	0.271	0.095	1.641	22.750	18.605	18.633
LUTHER SE	35 30.0	97 7.5	680000.	1.022	1.223	241000.	0.492	0.316	1.641	22.750	18.576	18.605
WELLSTON	35 37.5	97 7.5	680000.	1.223	1.424	255000.	0.712	0.536	1.641	22.751	18.547	18.576
------	35 45.0	97 7.5	680000.	1.424	1.624	269000.	0.931	0.755	1.641	22.751	18.518	18.547
------	35 52.5	97 7.5	679000.	-0.016	0.185	283000.	1.149	0.974	1.641	22.752	18.489	18.518
STILLWATER SOUT	36 0.0	97 7.5	679000.	0.185	0.386	297000.	1.366	1.191	1.641	22.752	18.459	18.489
STILLWATER NORT	36 7.5	97 7.5	679000.	0.386	0.587	311000.	1.583	1.408	1.640	22.753	18.430	18.459
MORRISON	36 15.0	97 7.5	679000.	0.587	0.788	324000.	0.157	-0.017	1.640	22.753	18.401	18.430
MORRISON NE	36 22.5	97 7.5	679000.	0.788	0.989	338000.	0.371	0.197	1.640	22.753	18.371	18.401
PONCA CITY SE	36 30.0	97 7.5	679000.	0.989	1.189	352000.	0.584	0.410	1.640	22.754	18.342	18.371
PONCA CITY	36 37.5	97 7.5	679000.	1.189	1.390	366000.	0.794	0.621	1.640	22.754	18.312	18.342
KILDARE	36 45.0	97 7.5	679000.	1.390	1.591	380000.	1.004	0.830	1.640	22.755	18.282	18.312
NEWKIRK	36 52.5	97 7.5	678000.	-0.049	0.152	394000.	1.211	1.038	1.640	22.755	18.252	18.282
------	37 0.0	97 7.5	678000.	0.152	0.353	408000.	1.417	1.244	1.640	22.756	18.223	18.252
GAINESVILLE NOR	33 37.5	97 15.0	670000.	0.635	0.808	33000.	0.617	0.460	1.640	22.743	18.999	19.027
THACKERVILLE	33 45.0	97 15.0	670000.	0.808	0.980	47000.	0.834	0.678	1.640	22.743	18.972	18.999
MARIETTA WEST	33 52.5	97 15.0	670000.	0.980	1.152	61000.	1.053	0.897	1.640	22.744	18.944	18.972
OVERBROOK	34 0.0	97 15.0	670000.	1.152	1.324	75000.	1.272	1.117	1.640	22.744	18.916	18.944
ARDMORE WEST	34 7.5	97 15.0	670000.	1.324	1.497	89000.	1.492	1.337	1.640	22.745	18.888	18.916
SPRINGER	34 15.0	97 15.0	669000.	-0.144	0.028	102000.	0.072	-0.083	1.640	22.745	18.860	18.888
TURNER FALLS	34 22.5	97 15.0	669000.	0.028	0.201	116000.	0.293	0.138	1.640	22.746	18.832	18.860
JOY	34 30.0	97 15.0	669000.	0.201	0.373	130000.	0.514	0.360	1.641	22.746	18.804	18.832
PAULS VALLEY	34 37.5	97 15.0	669000.	0.373	0.545	144000.	0.736	0.582	1.641	22.747	18.776	18.804
BYARS SW	34 45.0	97 15.0	669000.	0.545	0.717	158000.	0.958	0.804	1.641	22.747	18.748	18.776
ROSEDALE	34 52.5	97 15.0	669000.	0.717	0.890	172000.	1.179	1.026	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL	
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
EASON	35 0.0	97 15.0	669000.	0.890	1.062	186000.	1.401	1.248	1.641	22.748	18.691	18.719
LITTLE AXE	35 7.5	97 15.0	669000.	1.062	1.234	200000.	1.623	1.469	1.641	22.749	18.662	18.691
STELLA	35 15.0	97 15.0	669000.	1.234	1.406	213000.	0.203	0.050	1.641	22.749	18.633	18.662
HARRAH	35 22.5	97 15.0	669000.	1.406	1.578	227000.	0.424	0.271	1.641	22.750	18.605	18.633
HORSESHOE LAKE	35 30.0	97 15.0	668000.	-0.062	0.110	241000.	0.644	0.492	1.641	22.750	18.576	18.605
LUTHER	35 37.5	97 15.0	668000.	0.110	0.282	255000.	0.864	0.712	1.641	22.751	18.547	18.576
------	35 45.0	97 15.0	668000.	0.282	0.454	269000.	1.083	0.931	1.641	22.751	18.518	18.547
------	35 52.5	97 15.0	668000.	0.454	0.627	283000.	1.301	1.149	1.641	22.752	18.489	18.518
STILLWATER SW	36 0.0	97 15.0	668000.	0.627	0.799	297000.	1.518	1.366	1.641	22.752	18.460	18.489
LAKE CARL BLACK	36 7.5	97 15.0	668000.	0.799	0.971	310000.	0.093	-0.058	1.640	22.753	18.430	18.460
BLACK BEAR	36 15.0	97 15.0	668000.	0.971	1.143	324000.	0.308	0.157	1.640	22.753	18.401	18.430
RED ROCK	36 22.5	97 15.0	668000.	1.143	1.316	338000.	0.522	0.371	1.640	22.753	18.371	18.401
MARLAND	36 30.0	97 15.0	668000.	1.316	1.488	352000.	0.734	0.584	1.640	22.754	18.342	18.371
PONCA CITY NW	36 37.5	97 15.0	667000.	-0.153	0.020	366000.	0.945	0.794	1.640	22.754	18.312	18.342
NEWKIRK SW	36 45.0	97 15.0	667000.	0.020	0.192	380000.	1.154	1.004	1.640	22.755	18.282	18.312
PECKHAM	36 52.5	97 15.0	667000.	0.192	0.364	394000.	1.361	1.211	1.640	22.755	18.252	18.282
------	37 0.0	97 15.0	667000.	0.364	0.537	408000.	1.567	1.417	1.640	22.756	18.223	18.252
------	33 37.5	97 22.5	658000.	-0.017	0.126	33000.	0.749	0.617	1.640	22.743	18.999	19.027
MARYSVILLE	33 45.0	97 22.5	658000.	0.126	0.270	47000.	0.966	0.834	1.640	22.743	18.972	18.999
BURNEYVILLE	33 52.5	97 22.5	658000.	0.270	0.413	61000.	1.184	1.053	1.640	22.744	18.944	18.972
HEALDTON SE	34 0.0	97 22.5	658000.	0.413	0.557	75000.	1.403	1.272	1.640	22.744	18.916	18.944
LONE GROVE	34 7.5	97 22.5	658000.	0.557	0.700	89000.	1.623	1.492	1.640	22.745	18.888	18.916
MILO	34 15.0	97 22.5	658000.	0.700	0.844	102000.	0.203	0.072	1.640	22.745	18.860	18.888
FOX NE	34 22.5	97 22.5	658000.	0.844	0.987	116000.	0.424	0.293	1.640	22.746	18.832	18.860
HENNEPIN	34 30.0	97 22.5	658000.	0.987	1.131	130000.	0.645	0.514	1.641	22.746	18.804	18.832
ELMORE CITY NE	34 37.5	97 22.5	658000.	1.131	1.274	144000.	0.866	0.736	1.641	22.747	18.776	18.804
PAOLI	34 45.0	97 22.5	658000.	1.274	1.418	158000.	1.088	0.958	1.641	22.747	18.748	18.776
WAYNE	34 52.5	97 22.5	658000.	1.418	1.561	172000.	1.309	1.179	1.641	22.748	18.719	18.748
PURCELL	35 0.0	97 22.5	657000.	-0.079	0.064	186000.	1.531	1.401	1.641	22.748	18.691	18.719
DENVER	35 7.5	97 22.5	657000.	0.064	0.208	199000.	0.112	-0.018	1.641	22.749	18.662	18.691
FRANKLIN	35 15.0	97 22.5	657000.	0.208	0.351	213000.	0.333	0.203	1.641	22.749	18.633	18.662
CHOCTAW	35 22.5	97 22.5	657000.	0.351	0.495	227000.	0.553	0.424	1.641	22.750	18.605	18.633
JONES	35 30.0	97 22.5	657000.	0.495	0.638	241000.	0.773	0.644	1.641	22.750	18.576	18.605
ARCADIA	35 37.5	97 22.5	657000.	0.638	0.782	255000.	0.993	0.864	1.641	22.751	18.547	18.576
GUTHRIE SE	35 45.0	97 22.5	657000.	0.782	0.925	269000.	1.211	1.083	1.641	22.751	18.518	18.547
LANGSTON	35 52.5	97 22.5	657000.	0.925	1.069	283000.	1.429	1.301	1.641	22.752	18.489	18.518
------	36 0.0	97 22.5	657000.	1.069	1.212	296000.	0.306	-0.123	1.641	22.752	18.459	18.489
------	36 7.5	97 22.5	657000.	1.212	1.356	310000.	0.222	0.093	1.640	22.753	18.430	18.459
PERRY	36 15.0	97 22.5	657000.	1.356	1.499	324000.	0.436	0.308	1.640	22.753	18.401	18.430
CERES	36 22.5	97 22.5	656000.	-0.141	0.002	338000.	0.650	0.522	1.640	22.753	18.371	18.401
TONKAWA SE	36 30.0	97 22.5	656000.	0.002	0.146	352000.	0.862	0.734	1.640	22.754	18.342	18.371
TONKAWA	36 37.5	97 22.5	656000.	0.146	0.290	366000.	1.072	0.945	1.640	22.754	18.312	18.342
BLACKWELL	36 45.0	97 22.5	656000.	0.290	0.433	380000.	1.281	1.154	1.640	22.755	18.282	18.312
BRAMAN	36 52.5	97 22.5	656000.	0.433	0.577	394000.	1.488	1.361	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)						
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
------	37 0.0	97 22.5	656000.	0.577	0.720	407000.	0.053	-0.073	1.640	22.756	18.222	18.252
------	33 37.5	97 30.0	647000.	0.970	1.085	33000.	0.957	0.749	1.640	22.743	18.999	19.027
LEON SOUTH	33 45.0	97 30.0	647000.	1.085	1.200	47000.	1.074	0.966	1.640	22.743	18.972	18.999
LEON NORTH	33 52.5	97 30.0	647000.	1.200	1.314	61000.	1.192	1.184	1.640	22.744	18.944	18.972
HEALDTON SW	34 0.0	97 30.0	647000.	1.314	1.429	75000.	1.511	1.403	1.640	22.744	18.916	18.944
HEALDTON	34 7.5	97 30.0	647000.	1.429	1.544	88000.	0.090	-0.017	1.640	22.745	18.888	18.916
FOX	34 15.0	97 30.0	646000.	-0.096	0.019	102000.	0.310	0.203	1.640	22.745	18.861	18.888
TATUMS	34 22.5	97 30.0	646000.	0.019	0.133	116000.	0.531	0.424	1.640	22.746	18.832	18.861
ELMORE CITY SOU	34 30.0	97 30.0	646000.	0.133	0.248	130000.	0.752	0.645	1.641	22.746	18.804	18.832
ELMORE CITY NOR	34 37.5	97 30.0	646000.	0.248	0.363	144000.	0.973	0.866	1.641	22.747	18.776	18.804
MAYSVILLE	34 45.0	97 30.0	646000.	0.363	0.478	158000.	1.195	1.088	1.641	22.747	18.748	18.776
STEALY	34 52.5	97 30.0	646000.	0.478	0.593	172000.	1.416	1.309	1.641	22.748	18.719	18.748
WASHINGTON	35 0.0	97 30.0	646000.	0.593	0.707	186000.	1.637	1.531	1.641	22.748	18.691	18.719
NORMAN	35 7.5	97 30.0	646000.	0.707	0.822	199000.	0.218	0.112	1.641	22.749	18.662	18.691
MOORE	35 15.0	97 30.0	646000.	0.822	0.937	213000.	0.439	0.333	1.641	22.749	18.633	18.662
MIDWEST CITY	35 22.5	97 30.0	646000.	0.937	1.052	227000.	0.659	0.553	1.641	22.750	18.605	18.633
SPENCER	35 30.0	97 30.0	646000.	1.052	1.167	241000.	0.879	0.773	1.641	22.750	18.576	18.605
EDMOND	35 37.5	97 30.0	646000.	1.167	1.282	255000.	1.098	0.993	1.641	22.751	18.547	18.576
GUTHRIE SOUTH	35 45.0	97 30.0	646000.	1.282	1.396	269000.	1.317	1.211	1.641	22.751	18.518	18.547
GUTHRIE NORTH	35 52.5	97 30.0	646000.	1.396	1.511	283000.	1.534	1.429	1.641	22.752	18.489	18.518
------	36 0.0	97 30.0	646000.	1.511	1.626	296000.	0.111	0.006	1.641	22.752	18.459	18.489
------	36 7.5	97 30.0	645000.	-0.015	0.100	310000.	0.326	0.222	1.640	22.753	18.430	18.459
LUCIEN	36 15.0	97 30.0	645000.	0.100	0.215	324000.	0.541	0.436	1.640	22.753	18.401	18.430
PERRY NW	36 22.5	97 30.0	645000.	0.215	0.330	338000.	0.756	0.650	1.640	22.753	18.371	18.401
BILLINGS	36 30.0	97 30.0	645000.	0.330	0.445	352000.	0.966	0.862	1.640	22.754	18.342	18.371
EDDY	36 37.5	97 30.0	645000.	0.445	0.560	366000.	1.176	1.072	1.640	22.754	18.312	18.342
HARDIN	36 45.0	97 30.0	645000.	0.560	0.674	380000.	1.385	1.281	1.640	22.755	18.282	18.312
BLACKWELL NW	36 52.5	97 30.0	645000.	0.674	0.789	394000.	1.592	1.488	1.640	22.755	18.252	18.282
------	37 0.0	97 30.0	645000.	0.789	0.904	407000.	0.157	0.053	1.640	22.756	18.223	18.252
------	33 37.5	97 37.5	635000.	0.317	0.403	33000.	0.941	0.857	1.640	22.743	18.999	19.027
------	33 45.0	97 37.5	635000.	0.403	0.489	47000.	1.158	1.074	1.640	22.743	18.972	18.999
SPANISH FORT	33 52.5	97 37.5	635000.	0.489	0.576	61000.	1.376	1.292	1.640	22.744	18.944	18.972
------	34 0.0	97 37.5	635000.	0.576	0.662	75000.	1.595	1.511	1.640	22.744	18.916	18.944
------	34 7.5	97 37.5	635000.	0.662	0.748	88000.	0.174	0.090	1.640	22.745	18.888	18.916
------	34 15.0	97 37.5	635000.	0.748	0.834	102000.	0.394	0.310	1.640	22.745	18.860	18.888
------	34 22.5	97 37.5	635000.	0.834	0.920	116000.	0.614	0.531	1.640	22.746	18.832	18.860
------	34 30.0	97 37.5	635000.	0.920	1.006	130000.	0.835	0.752	1.641	22.746	18.804	18.832
------	34 37.5	97 37.5	635000.	1.006	1.092	144000.	1.056	0.973	1.641	22.747	18.776	18.804
LINDSAY	34 45.0	97 37.5	635000.	1.092	1.179	158000.	1.277	1.195	1.641	22.747	18.748	18.776
CRINER	34 52.5	97 37.5	635000.	1.179	1.265	172000.	1.499	1.416	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID				
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
COLE	35 0.0	97 37.5	635000.	1.265	1.351	185000.	0.079	-0.003	1.641	22.748	18.691	18.719
NEWCASTLE	35 7.5	97 37.5	635000.	1.351	1.437	199000.	0.300	0.218	1.641	22.749	18.662	18.691
OKLAHOMA CITY S	35 15.0	97 37.5	635000.	1.437	1.523	213000.	0.521	0.439	1.641	22.749	18.634	18.662
OKLAHOMA CITY	35 22.5	97 37.5	635000.	1.523	1.609	227000.	0.741	0.659	1.641	22.750	18.605	18.634
BRITTON	35 30.0	97 37.5	634000.	-0.032	0.055	241000.	0.961	0.879	1.641	22.750	18.576	18.605
BETHANY NE	35 37.5	97 37.5	634000.	0.055	0.141	255000.	1.180	1.098	1.641	22.751	18.547	18.576
NAVINA	35 45.0	97 37.5	634000.	0.141	0.227	269000.	1.399	1.317	1.641	22.751	18.518	18.547
CRESCENT	35 52.5	97 37.5	634000.	0.227	0.313	283000.	1.616	1.534	1.641	22.752	18.489	18.518
------	36 0.0	97 37.5	634000.	0.313	0.399	296000.	0.192	0.111	1.641	22.752	18.460	18.489
------	36 7.5	97 37.5	634000.	0.399	0.485	310000.	0.408	0.326	1.640	22.752	18.430	18.460
------	36 15.0	97 37.5	634000.	0.485	0.571	324000.	0.622	0.541	1.640	22.753	18.401	18.430
------	36 22.5	97 37.5	634000.	0.571	0.657	338000.	0.835	0.754	1.640	22.754	18.371	18.401
LAMONT SE	36 30.0	97 37.5	634000.	0.657	0.743	352000.	1.047	0.966	1.640	22.754	18.342	18.371
LAMONT	36 37.5	97 37.5	634000.	0.743	0.830	366000.	1.257	1.176	1.640	22.754	18.312	18.342
DEER CREEK	36 45.0	97 37.5	634000.	0.830	0.916	380000.	1.466	1.385	1.640	22.755	18.282	18.312
MEDFORD NE	36 52.5	97 37.5	634000.	0.916	1.002	393000.	0.033	-0.048	1.640	22.755	18.252	18.282
------	37 0.0	97 37.5	634000.	1.002	1.088	407000.	0.238	0.157	1.640	22.756	18.223	18.252
------	33 37.5	97 45.0	624000.	1.305	1.362	33000.	1.001	0.941	1.640	22.743	18.999	19.027
------	33 45.0	97 45.0	624000.	1.362	1.420	47000.	1.218	1.158	1.640	22.743	18.972	18.999
PRAIRIE VALLEY	33 52.5	97 45.0	624000.	1.420	1.477	61000.	1.436	1.376	1.640	22.744	18.944	18.972
------	34 0.0	97 45.0	624000.	1.477	1.535	74000.	0.014	-0.046	1.640	22.744	18.916	18.944
------	34 7.5	97 45.0	624000.	1.535	1.592	88000.	0.233	0.174	1.640	22.745	18.888	18.916
------	34 15.0	97 45.0	623000.	-0.048	0.009	102000.	0.453	0.394	1.640	22.745	18.860	18.888
------	34 22.5	97 45.0	623000.	0.009	0.067	116000.	0.674	0.614	1.640	22.746	18.832	18.860
------	34 30.0	97 45.0	623000.	0.067	0.124	130000.	0.894	0.835	1.641	22.746	18.804	18.832
------	34 37.5	97 45.0	623000.	0.124	0.181	144000.	1.115	1.056	1.641	22.747	18.776	18.804
LINDSAY SW	34 45.0	97 45.0	623000.	0.181	0.239	158000.	1.337	1.277	1.641	22.747	18.748	18.776
BRADLEY	34 52.5	97 45.0	623000.	0.239	0.296	172000.	1.558	1.499	1.641	22.748	18.719	18.748
DIBBLE	35 0.0	97 45.0	623000.	0.296	0.354	185000.	0.136	0.079	1.641	22.748	18.691	18.719
BLANCHARD	35 7.5	97 45.0	623000.	0.354	0.411	199000.	0.359	0.300	1.641	22.749	18.662	18.691
OKLAHOMA CITY S	35 15.0	97 45.0	623000.	0.411	0.468	213000.	0.580	0.521	1.641	22.749	18.633	18.662
MUSTANG	35 22.5	97 45.0	623000.	0.468	0.526	227000.	0.800	0.741	1.641	22.750	18.605	18.633
BETHANY	35 30.0	97 45.0	623000.	0.526	0.583	241000.	1.020	0.961	1.641	22.750	18.576	18.605
PIEDMONT	35 37.5	97 45.0	623000.	0.583	0.641	255000.	1.239	1.180	1.641	22.751	18.547	18.576
CASHION	35 45.0	97 45.0	623000.	0.641	0.698	269000.	1.457	1.399	1.641	22.751	18.518	18.547
CRESCENT NW	35 52.5	97 45.0	623000.	0.698	0.755	282000.	0.034	-0.024	1.641	22.752	18.489	18.518
------	36 0.0	97 45.0	623000.	0.755	0.813	296000.	0.251	0.192	1.641	22.752	18.460	18.489
------	36 7.5	97 45.0	623000.	0.813	0.870	310000.	0.466	0.408	1.640	22.752	18.430	18.460
------	36 15.0	97 45.0	623000.	0.870	0.928	324000.	0.680	0.622	1.640	22.753	18.401	18.430
------	36 22.5	97 45.0	623000.	0.928	0.985	338000.	0.893	0.835	1.640	22.753	18.371	18.401
HUNTER	36 30.0	97 45.0	623000.	0.985	1.042	352000.	1.105	1.047	1.640	22.754	18.342	18.371
LAMONT NW	36 37.5	97 45.0	623000.	1.042	1.100	366000.	1.315	1.257	1.640	22.754	18.312	18.342
MEDFORD	36 45.0	97 45.0	623000.	1.100	1.157	380000.	1.524	1.466	1.640	22.755	18.282	18.312
RENFROW	36 52.5	97 45.0	623000.	1.157	1.214	393000.	0.090	0.033	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
	[B]	[C]	[D]	DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL	
[A]NAME	LATITUDE (DEGS MINS)	LONGITUDE (DEGS MINS)	VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
*-----	37 0.0	97 45.0	623000.	1.214	1.272	407000.	0.295	0.238	1.640	22.756	18.223	18.252
*-----	33 37.5	97 52.5	612000.	0.652	0.681	33000.	1.037	1.001	1.640	22.743	18.999	19.027
*BELCHERVILLE	33 45.0	97 52.5	612000.	0.681	0.710	47000.	1.254	1.218	1.640	22.743	18.972	18.999
*FLEETWOOD	33 52.5	97 52.5	612000.	0.710	0.739	61000.	1.471	1.436	1.640	22.744	18.944	18.972
*-----	34 0.0	97 52.5	612000.	0.739	0.767	74000.	0.050	0.014	1.640	22.744	18.916	18.944
*-----	34 7.5	97 52.5	612000.	0.767	0.796	88000.	0.269	0.233	1.640	22.745	18.889	18.916
*COMANCHE SE	34 15.0	97 52.5	612000.	0.796	0.825	102000.	0.489	0.453	1.640	22.745	18.860	18.889
*HARRISBURG	34 22.5	97 52.5	612000.	0.825	0.853	116000.	0.709	0.674	1.640	22.746	18.832	18.860
*-----	34 30.0	97 52.5	612000.	0.853	0.882	130000.	0.930	0.894	1.641	22.746	18.804	18.832
*-----	34 37.5	97 52.5	612000.	0.882	0.911	144000.	1.151	1.115	1.641	22.747	18.776	18.804
*-----	34 45.0	97 52.5	612000.	0.911	0.940	158000.	1.372	1.337	1.641	22.747	18.748	18.776
*-----	34 52.5	97 52.5	612000.	0.940	0.968	172000.	1.593	1.558	1.641	22.748	18.719	18.748
*TABLER	35 0.0	97 52.5	612000.	0.968	0.997	185000.	0.174	0.138	1.641	22.748	18.691	18.719
*CHICKASHA NE	35 7.5	97 52.5	612000.	0.997	1.026	199000.	0.395	0.359	1.641	22.749	18.662	18.691
*TUTTLE	35 15.0	97 52.5	612000.	1.026	1.055	213000.	0.615	0.580	1.641	22.749	18.633	18.662
*MINCO NE	35 22.5	97 52.5	612000.	1.055	1.083	227000.	0.835	0.800	1.641	22.750	18.605	18.633
*RICHLAND	35 30.0	97 52.5	612000.	1.083	1.112	241000.	1.055	1.020	1.641	22.750	18.576	18.605
*EL RENO NE	35 37.5	97 52.5	612000.	1.112	1.141	255000.	1.274	1.239	1.641	22.751	18.547	18.576
*KINGFISHER SE	35 45.0	97 52.5	612000.	1.141	1.169	269000.	1.492	1.457	1.641	22.751	18.518	18.547
*KINGFISHER NE	35 52.5	97 52.5	612000.	1.169	1.198	282000.	0.069	0.034	1.641	22.752	18.489	18.518
*-----	36 0.0	97 52.5	612000.	1.198	1.227	296000.	0.286	0.251	1.641	22.752	18.459	18.489
*-----	36 7.5	97 52.5	612000.	1.227	1.255	310000.	0.501	0.466	1.640	22.752	18.430	18.459
*-----	36 15.0	97 52.5	612000.	1.255	1.284	324000.	0.715	0.680	1.640	22.753	18.401	18.430
*ENID EAST	36 22.5	97 52.5	612000.	1.284	1.313	338000.	0.928	0.893	1.640	22.753	18.371	18.401
*KREMLIN	36 30.0	97 52.5	612000.	1.313	1.341	352000.	1.140	1.105	1.640	22.754	18.342	18.371
*POND CREEK	36 37.5	97 52.5	612000.	1.341	1.370	366000.	1.350	1.315	1.640	22.754	18.312	18.342
*WAKITA SE	36 45.0	97 52.5	612000.	1.370	1.399	380000.	1.558	1.524	1.640	22.755	18.282	18.312
*WAKITA NE	36 52.5	97 52.5	612000.	1.399	1.427	393000.	0.125	0.090	1.640	22.755	18.253	18.282
*-----	37 0.0	97 52.5	612000.	1.427	1.456	407000.	0.330	0.295	1.640	22.756	18.222	18.253
*-----	33 37.5	98 0.0	601000.	1.640	1.640	33000.	1.049	1.037	1.640	22.743	18.999	19.027
*RINGGOLD	33 45.0	98 0.0	601000.	1.640	1.640	47000.	1.266	1.254	1.640	22.743	18.972	18.999
*TERRAL	33 52.5	98 0.0	601000.	1.640	1.640	61000.	1.483	1.471	1.640	22.744	18.944	18.972
*-----	34 0.0	98 0.0	601000.	1.640	1.640	74000.	0.062	0.050	1.640	22.744	18.916	18.944
*-----	34 7.5	98 0.0	601000.	1.640	1.640	88000.	0.281	0.269	1.640	22.745	18.888	18.916
*COMANCHE	34 15.0	98 0.0	601000.	1.640	1.640	102000.	0.501	0.489	1.640	22.745	18.861	18.888
*DUNCAN SOUTH	34 22.5	98 0.0	601000.	1.640	1.640	116000.	0.721	0.709	1.640	22.746	18.832	18.861
*-----	34 30.0	98 0.0	601000.	1.640	1.641	130000.	0.942	0.930	1.641	22.746	18.804	18.832
*-----	34 37.5	98 0.0	601000.	1.641	1.641	144000.	1.163	1.151	1.641	22.747	18.776	18.804
*-----	34 45.0	98 0.0	601000.	1.641	1.641	158000.	1.384	1.372	1.641	22.747	18.748	18.776
*-----	34 52.5	98 0.0	601000.	1.641	1.641	172000.	1.605	1.593	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J] GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION					1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
	[B] LATITUDE		[C] LONGITUDE		[D]	DISPLACEMENT (INCHES)		[G]	DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL	
[A]NAME	(DEGS MINS)		(DEGS MINS)		VALUE (METERS)	[E]SW	[F]NW	VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
CHICKASHA	35 0.0		98 0.0		601000.	1.641	1.641	185000.	0.186	0.174	1.641	22.748	18.891	18.719
POCASSET	35 7.5		98 0.0		601000.	1.641	1.641	199000.	0.406	0.395	1.641	22.749	18.862	18.691
MINCO	35 15.0		98 0.0		601000.	1.641	1.641	213000.	0.627	0.615	1.641	22.749	18.833	18.662
UNION CITY	35 22.5		98 0.0		601000.	1.641	1.641	227000.	0.847	0.835	1.641	22.750	18.805	18.633
EL RENO	35 30.0		98 0.0		601000.	1.641	1.641	241000.	1.067	1.055	1.641	22.750	18.776	18.605
OKARCHE	35 37.5		98 0.0		601000.	1.641	1.641	255000.	1.286	1.274	1.641	22.751	18.747	18.576
KINGFISHER	35 45.0		98 0.0		601000.	1.641	1.641	269000.	1.504	1.492	1.641	22.751	18.718	18.547
DOVER	35 52.5		98 0.0		601000.	1.641	1.641	282000.	0.081	0.069	1.641	22.752	18.489	18.518
-----	36 0.0		98 0.0		601000.	1.641	1.641	296000.	0.297	0.286	1.641	22.752	18.459	18.489
-----	36 7.5		98 0.0		601000.	1.641	1.640	310000.	0.513	0.501	1.640	22.753	18.430	18.459
-----	36 15.0		98 0.0		601000.	1.640	1.640	324000.	0.727	0.715	1.640	22.753	18.401	18.430
ENID WEST	36 22.5		98 0.0		601000.	1.640	1.640	338000.	0.940	0.928	1.640	22.753	18.371	18.401
HILLSDALE	36 30.0		98 0.0		601000.	1.640	1.640	352000.	1.151	1.140	1.640	22.754	18.342	18.371
POND CREEK NW	36 37.5		98 0.0		601000.	1.640	1.640	366000.	1.361	1.350	1.640	22.754	18.312	18.342
WAKITA SW	36 45.0		98 0.0		601000.	1.640	1.640	380000.	1.570	1.558	1.640	22.755	18.282	18.312
WAKITA	36 52.5		98 0.0		601000.	1.640	1.640	393000.	0.136	0.125	1.640	22.755	18.252	18.282
-----	37 0.0		98 0.0		601000.	1.640	1.640	407000.	0.341	0.330	1.640	22.756	18.223	18.252
-----	33 37.5		98 7.5		589000.	0.988	0.959	33000.	1.037	1.049	1.640	22.743	18.999	19.027
-----	33 45.0		98 7.5		589000.	0.959	0.930	47000.	1.254	1.266	1.640	22.743	18.972	18.999
-----	33 52.5		98 7.5		589000.	0.930	0.902	61000.	1.471	1.483	1.640	22.744	18.944	18.972
-----	34 0.0		98 7.5		589000.	0.902	0.873	74000.	0.050	0.062	1.640	22.744	18.916	18.944
-----	34 7.5		98 7.5		589000.	0.873	0.844	88000.	0.269	0.281	1.640	22.745	18.888	18.916
-----	34 15.0		98 7.5		589000.	0.844	0.816	102000.	0.489	0.501	1.640	22.745	18.861	18.888
-----	34 22.5		98 7.5		589000.	0.816	0.787	116000.	0.709	0.721	1.640	22.746	18.832	18.861
NELLIE	34 30.0		98 7.5		589000.	0.787	0.758	130000.	0.930	0.942	1.641	22.746	18.804	18.832
DENTON	34 37.5		98 7.5		589000.	0.758	0.730	144000.	1.151	1.163	1.641	22.747	18.776	18.804
ROCKYFORD	34 45.0		98 7.5		589000.	0.730	0.701	158000.	1.372	1.384	1.641	22.747	18.748	18.776
LAVERTY	34 52.5		98 7.5		589000.	0.701	0.672	172000.	1.593	1.605	1.641	22.748	18.719	18.748
VERDEN	35 0.0		98 7.5		589000.	0.672	0.644	185000.	0.174	0.186	1.641	22.748	18.691	18.719
ANADARKO NE	35 7.5		98 7.5		589000.	0.644	0.615	199000.	0.395	0.406	1.641	22.749	18.662	18.691
COGAR SE	35 15.0		98 7.5		589000.	0.615	0.586	213000.	0.615	0.627	1.641	22.749	18.633	18.662
COGAR NE	35 22.5		98 7.5		589000.	0.586	0.557	227000.	0.835	0.847	1.641	22.750	18.605	18.633
-----	35 30.0		98 7.5		589000.	0.557	0.529	241000.	1.055	1.067	1.641	22.750	18.576	18.605
-----	35 37.5		98 7.5		589000.	0.529	0.500	255000.	1.274	1.286	1.641	22.751	18.547	18.576
LOYAL SE	35 45.0		98 7.5		589000.	0.500	0.471	269000.	1.492	1.504	1.641	22.751	18.518	18.547
LOYAL	35 52.5		98 7.5		589000.	0.471	0.443	282000.	0.069	0.081	1.641	22.752	18.489	18.518
-----	36 0.0		98 7.5		589000.	0.443	0.414	296000.	0.286	0.297	1.641	22.752	18.459	18.489
-----	36 7.5		98 7.5		589000.	0.414	0.385	310000.	0.501	0.513	1.640	22.752	18.430	18.459
-----	36 15.0		98 7.5		589000.	0.385	0.356	324000.	0.715	0.727	1.640	22.753	18.401	18.430
-----	36 22.5		98 7.5		589000.	0.356	0.328	338000.	0.928	0.940	1.640	22.753	18.371	18.401
JET SE	36 30.0		98 7.5		589000.	0.328	0.299	352000.	1.140	1.151	1.640	22.754	18.342	18.371
NASH	36 37.5		98 7.5		589000.	0.299	0.270	366000.	1.350	1.361	1.640	22.754	18.312	18.342
SAND CREEK	36 45.0		98 7.5		589000.	0.270	0.242	380000.	1.558	1.570	1.640	22.755	18.282	18.312
MANCHESTER	36 52.5		98 7.5		589000.	0.242	0.213	393000.	0.125	0.136	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J] GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID			
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
*-----	37 0.0	98 7.5	589000.	0.213	0.184	407000.	0.330	0.341	1.640	22.756	18.223	18.252
*-----	33 37.5	98 15.0	577000.	0.335	0.278	33000.	1.001	1.037	1.640	22.743	18.999	19.027
*-----	33 45.0	98 15.0	577000.	0.278	0.220	47000.	1.218	1.254	1.640	22.743	18.972	18.999
*-----	33 52.5	98 15.0	577000.	0.220	0.163	61000.	1.436	1.471	1.640	22.744	18.944	18.972
*-----	34 0.0	98 15.0	577000.	0.163	0.106	74000.	0.014	0.050	1.640	22.744	18.916	18.944
*-----	34 7.5	98 15.0	577000.	0.106	0.048	88000.	0.233	0.269	1.640	22.745	18.889	18.916
*-----	34 15.0	98 15.0	577000.	0.048	-0.009	102000.	0.453	0.489	1.640	22.745	18.860	18.889
*-----	34 22.5	98 15.0	578000.	1.631	1.574	116000.	0.674	0.709	1.640	22.746	18.832	18.860
*LETITIA	34 30.0	98 15.0	578000.	1.574	1.517	130000.	0.894	0.930	1.641	22.746	18.804	18.832
*STERLING	34 37.5	98 15.0	578000.	1.517	1.459	144000.	1.115	1.151	1.641	22.747	18.776	18.804
*FLETCHER	34 45.0	98 15.0	578000.	1.459	1.402	158000.	1.337	1.372	1.641	22.747	18.748	18.776
*CYRIL	34 52.5	98 15.0	578000.	1.402	1.345	172000.	1.558	1.593	1.641	22.748	18.719	18.748
*ANADARKO EAST	35 0.0	98 15.0	578000.	1.345	1.287	185000.	0.138	0.174	1.641	22.748	18.691	18.719
*ANADARKO NW	35 7.5	98 15.0	578000.	1.287	1.230	199000.	0.359	0.395	1.641	22.749	18.662	18.691
*COGAR	35 15.0	98 15.0	578000.	1.230	1.172	213000.	0.580	0.615	1.641	22.749	18.633	18.662
*COGAR NW	35 22.5	98 15.0	578000.	1.172	1.115	227000.	0.800	0.835	1.641	22.750	18.605	18.633
*FORT RENO SW	35 30.0	98 15.0	578000.	1.115	1.057	241000.	1.020	1.055	1.641	22.750	18.576	18.605
*-----	35 37.5	98 15.0	578000.	1.057	1.000	255000.	1.239	1.274	1.641	22.751	18.547	18.576
*OMEGA	35 45.0	98 15.0	578000.	1.000	0.943	269000.	1.457	1.492	1.641	22.751	18.518	18.547
*LOYAL NW	35 52.5	98 15.0	578000.	0.943	0.885	282000.	0.034	0.069	1.641	22.752	18.489	18.518
*-----	36 0.0	98 15.0	578000.	0.885	0.828	296000.	0.251	0.286	1.641	22.752	18.459	18.489
*-----	36 7.5	98 15.0	578000.	0.828	0.770	310000.	0.466	0.501	1.640	22.752	18.430	18.459
*-----	36 15.0	98 15.0	578000.	0.770	0.713	324000.	0.680	0.715	1.640	22.753	18.401	18.430
*-----	36 22.5	98 15.0	578000.	0.713	0.655	338000.	0.893	0.928	1.640	22.753	18.371	18.401
*GOLTRY	36 30.0	98 15.0	578000.	0.655	0.598	352000.	1.105	1.140	1.640	22.754	18.342	18.371
*JET	36 37.5	98 15.0	578000.	0.598	0.540	366000.	1.315	1.350	1.640	22.754	18.312	18.342
*MANCHESTER SW	36 45.0	98 15.0	578000.	0.540	0.483	380000.	1.524	1.558	1.640	22.755	18.282	18.312
*MANCHESTER NW	36 52.5	98 15.0	578000.	0.483	0.426	393000.	0.090	0.125	1.640	22.755	18.253	18.282
*-----	37 0.0	98 15.0	578000.	0.426	0.368	407000.	0.295	0.330	1.640	22.756	18.222	18.253
*-----	33 37.5	98 22.5	566000.	1.323	1.237	33000.	0.941	1.001	1.640	22.743	18.999	19.027
*-----	33 45.0	98 22.5	566000.	1.237	1.151	47000.	1.158	1.218	1.640	22.743	18.972	18.999
*-----	33 52.5	98 22.5	566000.	1.151	1.065	61000.	1.376	1.436	1.640	22.744	18.944	18.972
*-----	34 0.0	98 22.5	566000.	1.065	0.979	74000.	-0.046	0.014	1.640	22.744	18.916	18.944
*-----	34 7.5	98 22.5	566000.	0.979	0.892	88000.	0.174	0.233	1.640	22.745	18.888	18.916
*-----	34 15.0	98 22.5	566000.	0.892	0.806	102000.	0.394	0.453	1.640	22.745	18.860	18.888
*-----	34 22.5	98 22.5	566000.	0.806	0.720	116000.	0.614	0.674	1.640	22.746	18.832	18.860
*NINEMILE CREEK	34 30.0	98 22.5	566000.	0.720	0.634	130000.	0.835	0.894	1.641	22.746	18.804	18.832
*ARBUCKLE HILL	34 37.5	98 22.5	566000.	0.634	0.548	144000.	1.056	1.115	1.641	22.747	18.776	18.804
*ELGIN	34 45.0	98 22.5	566000.	0.548	0.462	158000.	1.277	1.337	1.641	22.747	18.748	18.776
*APACHE	34 52.5	98 22.5	566000.	0.462	0.376	172000.	1.499	1.558	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J] GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION					1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
	[B] LATITUDE		[C] LONGITUDE		[D]	DISPLACEMENT (INCHES)		[G]	DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL	
[A]NAME	(DEGS	MINS)	(DEGS	MINS)	VALUE (METERS)	[E]SW	[F]NW	VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
-----	35	0.0	98	22.5	566000.	0.376	0.290	185000.	0.079	0.138	1.641	22.748	18.691	18.719
-----	35	7.5	98	22.5	566000.	0.290	0.204	199000.	0.300	0.359	1.641	22.749	18.662	18.691
-----	35	15.0	98	22.5	566000.	0.204	0.118	213000.	0.521	0.580	1.641	22.749	18.633	18.662
-----	35	22.5	98	22.5	566000.	0.118	0.032	227000.	0.741	0.800	1.641	22.750	18.605	18.633
-----	35	30.0	98	22.5	566000.	0.032	-0.055	241000.	0.961	1.020	1.641	22.750	18.576	18.605
-----	35	37.5	98	22.5	567000.	1.586	1.500	255000.	1.180	1.239	1.641	22.751	18.547	18.576
WATONGA SE	35	45.0	98	22.5	567000.	1.500	1.414	269000.	1.399	1.457	1.641	22.751	18.518	18.547
HITCHCOCK	35	52.5	98	22.5	567000.	1.414	1.328	282000.	-0.024	0.034	1.641	22.752	18.489	18.518
OKEENE	36	0.0	98	22.5	567000.	1.328	1.241	296000.	0.192	0.251	1.641	22.752	18.460	18.489
ISABELLA	36	7.5	98	22.5	567000.	1.241	1.155	310000.	0.408	0.466	1.640	22.752	18.430	18.460
FAIRVIEW SE	36	15.0	98	22.5	567000.	1.155	1.069	324000.	0.622	0.680	1.640	22.753	18.401	18.430
FAIRVIEW NE	36	22.5	98	22.5	567000.	1.069	0.983	338000.	0.835	0.893	1.640	22.754	18.371	18.401
HELENA	36	30.0	98	22.5	567000.	0.983	0.897	352000.	1.047	1.105	1.640	22.754	18.342	18.371
CHEROKEE SOUTH	36	37.5	98	22.5	567000.	0.897	0.811	366000.	1.257	1.315	1.640	22.754	18.312	18.342
CHEROKEE NORTH	36	45.0	98	22.5	567000.	0.811	0.724	380000.	1.466	1.524	1.640	22.755	18.282	18.312
AMORITA	36	52.5	98	22.5	567000.	0.724	0.638	393000.	0.033	0.090	1.640	22.755	18.252	18.282
-----	37	0.0	98	22.5	567000.	0.638	0.552	407000.	0.238	0.295	1.640	22.756	18.223	18.252
-----	33	37.5	98	30.0	554000.	0.670	0.555	33000.	0.857	0.941	1.640	22.743	18.999	19.027
-----	33	45.0	98	30.0	554000.	0.555	0.441	47000.	1.074	1.158	1.640	22.743	18.972	18.999
-----	33	52.5	98	30.0	554000.	0.441	0.326	61000.	1.292	1.376	1.640	22.744	18.944	18.972
-----	34	0.0	98	30.0	554000.	0.326	0.211	75000.	1.511	1.595	1.640	22.744	18.916	18.944
-----	34	7.5	98	30.0	554000.	0.211	0.096	88000.	0.090	0.174	1.640	22.745	18.888	18.916
-----	34	15.0	98	30.0	554000.	0.096	-0.019	102000.	0.310	0.394	1.640	22.745	18.860	18.888
-----	34	22.5	98	30.0	555000.	1.622	1.507	116000.	0.531	0.614	1.640	22.746	18.832	18.860
LAWTON	34	30.0	98	30.0	555000.	1.507	1.392	130000.	0.752	0.835	1.641	22.746	18.804	18.832
FORT SILL	34	37.5	98	30.0	555000.	1.392	1.278	144000.	0.973	1.056	1.641	22.747	18.776	18.804
RICHARDS SPUR	34	45.0	98	30.0	555000.	1.278	1.163	158000.	1.195	1.277	1.641	22.747	18.748	18.776
BOONE	34	52.5	98	30.0	555000.	1.163	1.048	172000.	1.416	1.499	1.641	22.748	18.719	18.748
-----	35	0.0	98	30.0	555000.	1.048	0.933	185000.	-0.003	0.079	1.641	22.748	18.691	18.719
-----	35	7.5	98	30.0	555000.	0.933	0.818	199000.	0.219	0.300	1.641	22.749	18.662	18.691
-----	35	15.0	98	30.0	555000.	0.818	0.704	213000.	0.439	0.521	1.641	22.749	18.634	18.662
-----	35	22.5	98	30.0	555000.	0.704	0.589	227000.	0.659	0.741	1.641	22.750	18.605	18.634
-----	35	30.0	98	30.0	555000.	0.589	0.474	241000.	0.879	0.961	1.641	22.750	18.576	18.605
-----	35	37.5	98	30.0	555000.	0.474	0.359	255000.	1.098	1.180	1.641	22.751	18.547	18.576
WATONGA	35	45.0	98	30.0	555000.	0.359	0.244	269000.	1.317	1.399	1.641	22.751	18.518	18.547
WATONGA LAKE	35	52.5	98	30.0	555000.	0.244	0.130	283000.	1.534	1.616	1.641	22.752	18.489	18.518
SOUTHARD	36	0.0	98	30.0	555000.	0.130	0.015	296000.	0.111	0.192	1.641	22.752	18.460	18.489
HOMESTEAD	36	7.5	98	30.0	555000.	0.015	-0.100	310000.	0.326	0.408	1.640	22.753	18.430	18.460
FAIRVIEW	36	15.0	98	30.0	556000.	1.540	1.425	324000.	0.541	0.622	1.640	22.753	18.401	18.430
CLEO SPRINGS	36	22.5	98	30.0	556000.	1.425	1.310	338000.	0.754	0.835	1.640	22.753	18.371	18.401
CARMEN	36	30.0	98	30.0	556000.	1.310	1.196	352000.	0.966	1.047	1.640	22.754	18.342	18.371
LAMBERT	36	37.5	98	30.0	556000.	1.196	1.081	366000.	1.176	1.257	1.640	22.754	18.312	18.342
INGERSOLL	36	45.0	98	30.0	556000.	1.081	0.966	380000.	1.385	1.466	1.640	22.755	18.282	18.312
BURLINGTON	36	52.5	98	30.0	556000.	0.966	0.851	393000.	-0.048	0.033	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	1ST VERTICAL GRID DISPLACEMENT (INCHES) [E]SW	[F]NW	[G] VALUE (METERS)	1ST HORIZONTAL GRID DISPLACEMENT (INCHES) [H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	MAP DIMENSIONS(INCHES) [L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
*-----	37 0.0	98 30.0	556000.	0.851	0.736	407000.	0.157	0.238	1.640	22.756	18.223	18.252
*-----	33 37.5	98 37.5	542000.	0.017	-0.126	33000.	0.749	0.857	1.640	22.743	18.999	19.027
*-----	33 45.0	98 37.5	543000.	1.514	1.371	47000.	0.966	1.074	1.640	22.743	18.972	18.999
*-----	33 52.5	98 37.5	543000.	1.371	1.227	61000.	1.184	1.292	1.640	22.744	18.944	18.972
*-----	34 0.0	98 37.5	543000.	1.227	1.084	75000.	1.403	1.511	1.640	22.744	18.916	18.944
*-----	34 7.5	98 37.5	543000.	1.084	0.940	88000.	-0.017	0.090	1.640	22.745	18.888	18.916
*-----	34 15.0	98 37.5	543000.	0.940	0.797	102000.	0.203	0.310	1.640	22.745	18.861	18.888
*-----	34 22.5	98 37.5	543000.	0.797	0.653	116000.	0.424	0.531	1.640	22.746	18.832	18.861
*TAUPA	34 30.0	98 37.5	543000.	0.653	0.510	130000.	0.645	0.752	1.641	22.746	18.804	18.832
*MOUNT SCOTT	34 37.5	98 37.5	543000.	0.510	0.366	144000.	0.866	0.973	1.641	22.747	18.776	18.804
*MEERS	34 45.0	98 37.5	543000.	0.366	0.223	158000.	1.088	1.195	1.641	22.747	18.748	18.776
*ALDEN	34 52.5	98 37.5	543000.	0.223	0.079	172000.	1.309	1.416	1.641	22.748	18.719	18.748
*-----	35 0.0	98 37.5	543000.	0.079	-0.064	186000.	1.531	1.637	1.641	22.748	18.691	18.719
*-----	35 7.5	98 37.5	544000.	1.576	1.433	199000.	0.112	0.218	1.641	22.749	18.662	18.691
*-----	35 15.0	98 37.5	544000.	1.433	1.289	213000.	0.333	0.439	1.641	22.749	18.633	18.662
*-----	35 22.5	98 37.5	544000.	1.289	1.146	227000.	0.553	0.659	1.641	22.750	18.605	18.633
*-----	35 30.0	98 37.5	544000.	1.146	1.002	241000.	0.773	0.879	1.641	22.750	18.576	18.605
*-----	35 37.5	98 37.5	544000.	1.002	0.859	255000.	0.993	1.098	1.641	22.751	18.547	18.576
*-----	35 45.0	98 37.5	544000.	0.859	0.715	269000.	1.211	1.317	1.641	22.751	18.518	18.547
*-----	35 52.5	98 37.5	544000.	0.715	0.572	283000.	1.429	1.534	1.641	22.752	18.489	18.518
*CANTON	36 0.0	98 37.5	544000.	0.572	0.428	296000.	0.006	0.111	1.641	22.752	18.459	18.489
*LONGDALE	36 7.5	98 37.5	544000.	0.428	0.285	310000.	0.222	0.326	1.640	22.753	18.430	18.459
*GLASS MTS	36 15.0	98 37.5	544000.	0.285	0.141	324000.	0.436	0.541	1.640	22.753	18.401	18.430
*GLASS MTS NE	36 22.5	98 37.5	544000.	0.141	-0.002	338000.	0.650	0.754	1.640	22.753	18.371	18.401
*DACOMA SE	36 30.0	98 37.5	545000.	1.638	1.494	352000.	0.862	0.966	1.640	22.754	18.342	18.371
*DACOMA	36 37.5	98 37.5	545000.	1.494	1.351	366000.	1.072	1.176	1.640	22.754	18.312	18.342
*ALVA SE	36 45.0	98 37.5	545000.	1.351	1.207	380000.	1.281	1.385	1.640	22.755	18.282	18.312
*CAPRON	36 52.5	98 37.5	545000.	1.207	1.063	394000.	1.488	1.592	1.640	22.755	18.252	18.282
*-----	37 0.0	98 37.5	545000.	1.063	0.920	407000.	0.053	0.157	1.640	22.756	18.223	18.252
*-----	33 37.5	98 45.0	531000.	1.005	0.832	33000.	0.617	0.749	1.640	22.743	18.999	19.027
*-----	33 45.0	98 45.0	531000.	0.832	0.660	47000.	0.834	0.966	1.640	22.743	18.972	18.999
*-----	33 52.5	98 45.0	531000.	0.660	0.488	61000.	1.053	1.184	1.640	22.744	18.944	18.972
*-----	34 0.0	98 45.0	531000.	0.488	0.316	75000.	1.272	1.403	1.640	22.744	18.916	18.944
*-----	34 7.5	98 45.0	531000.	0.316	0.144	89000.	1.492	1.623	1.640	22.745	18.888	18.916
*-----	34 15.0	98 45.0	531000.	0.144	-0.028	102000.	0.072	0.203	1.640	22.745	18.860	18.888
*POST OAK CREEK	34 22.5	98 45.0	532000.	1.612	1.440	116000.	0.293	0.424	1.640	22.746	18.832	18.860
*QUANAH MTN	34 30.0	98 45.0	532000.	1.440	1.268	130000.	0.514	0.645	1.641	22.746	18.804	18.832
*SADDLE MTN	34 37.5	98 45.0	532000.	1.268	1.096	144000.	0.736	0.866	1.641	22.747	18.776	18.804
*SADDLE MTN	34 45.0	98 45.0	532000.	1.096	0.923	158000.	0.958	1.088	1.641	22.747	18.748	18.776
*BALLY MTN	34 52.5	98 45.0	532000.	0.923	0.751	172000.	1.179	1.309	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID			HORIZONTAL	
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
*-----	35 0.0	98 45.0	532000.	0.751	0.579	186000.	1.401	1.531	1.641	22.748	18.691	18.719
*-----	35 7.5	98 45.0	532000.	0.579	0.407	199000.	-0.018	0.112	1.641	22.749	18.662	18.691
*-----	35 15.0	98 45.0	532000.	0.407	0.235	213000.	0.203	0.333	1.641	22.749	18.633	18.662
*-----	35 22.5	98 45.0	532000.	0.235	0.062	227000.	0.424	0.553	1.641	22.750	18.605	18.633
*-----	35 30.0	98 45.0	532000.	0.062	-0.110	241000.	0.644	0.773	1.641	22.750	18.576	18.605
*-----	35 37.5	98 45.0	533000.	1.531	1.358	255000.	0.864	0.993	1.641	22.751	18.547	18.576
*-----	35 45.0	98 45.0	533000.	1.358	1.186	269000.	1.083	1.211	1.641	22.751	18.518	18.547
*-----	35 52.5	98 45.0	533000.	1.186	1.014	283000.	1.301	1.429	1.641	22.752	18.489	18.518
*CANTON SW	36 0.0	98 45.0	533000.	1.014	0.842	296000.	-0.123	0.006	1.641	22.752	18.459	18.489
*CANTON NW	36 7.5	98 45.0	533000.	0.842	0.669	310000.	0.093	0.222	1.640	22.753	18.430	18.459
*GLASS MTS SW	36 15.0	98 45.0	533000.	0.669	0.497	324000.	0.308	0.436	1.640	22.753	18.401	18.430
*GLASS MTS NW	36 22.5	98 45.0	533000.	0.497	0.325	338000.	0.522	0.650	1.640	22.753	18.371	18.401
*DACOMA SW	36 30.0	98 45.0	533000.	0.325	0.153	352000.	0.734	0.862	1.640	22.754	18.342	18.371
*HOPETON	36 37.5	98 45.0	533000.	0.153	-0.020	366000.	0.945	1.072	1.640	22.754	18.312	18.342
*ALVA	36 45.0	98 45.0	534000.	1.620	1.448	380000.	1.154	1.281	1.640	22.755	18.282	18.312
*ALVA NW	36 52.5	98 45.0	534000.	1.448	1.276	394000.	1.361	1.488	1.640	22.755	18.252	18.282
*-----	37 0.0	98 45.0	534000.	1.276	1.103	407000.	-0.073	0.053	1.640	22.756	18.222	18.252
*-----	33 37.5	98 52.5	519000.	0.352	0.151	33000.	0.460	0.617	1.640	22.743	18.999	19.027
*-----	33 45.0	98 52.5	519000.	0.151	-0.050	47000.	0.676	0.834	1.640	22.743	18.972	18.999
*-----	33 52.5	98 52.5	520000.	1.590	1.389	61000.	0.897	1.053	1.640	22.744	18.944	18.972
*-----	34 0.0	98 52.5	520000.	1.389	1.188	75000.	1.117	1.272	1.640	22.744	18.916	18.944
*-----	34 7.5	98 52.5	520000.	1.188	0.988	89000.	1.337	1.492	1.640	22.745	18.888	18.916
*-----	34 15.0	98 52.5	520000.	0.988	0.787	102000.	-0.083	0.072	1.640	22.745	18.860	18.888
*-----	34 22.5	98 52.5	520000.	0.787	0.586	116000.	0.138	0.293	1.640	22.746	18.832	18.860
*INDIAHOMA	34 30.0	98 52.5	520000.	0.586	0.385	130000.	0.360	0.514	1.641	22.746	18.804	18.832
*ODETTA	34 37.5	98 52.5	520000.	0.385	0.184	144000.	0.582	0.736	1.641	22.747	18.776	18.804
*COOPERTON	34 45.0	98 52.5	520000.	0.184	-0.017	158000.	0.804	0.958	1.641	22.747	18.748	18.776
*UNAP MTN	34 52.5	98 52.5	521000.	1.624	1.423	172000.	1.026	1.179	1.641	22.748	18.719	18.748
*-----	35 0.0	98 52.5	521000.	1.423	1.222	186000.	1.248	1.401	1.641	22.748	18.691	18.719
*-----	35 7.5	98 52.5	521000.	1.222	1.021	200000.	1.469	1.623	1.641	22.749	18.662	18.691
*-----	35 15.0	98 52.5	521000.	1.021	0.820	213000.	0.050	0.203	1.641	22.749	18.633	18.662
*-----	35 22.5	98 52.5	521000.	0.820	0.619	227000.	0.271	0.424	1.641	22.750	18.605	18.633
*-----	35 30.0	98 52.5	521000.	0.619	0.418	241000.	0.492	0.644	1.641	22.750	18.576	18.605
*-----	35 37.5	98 52.5	521000.	0.418	0.217	255000.	0.712	0.864	1.641	22.751	18.547	18.576
*-----	35 45.0	98 52.5	521000.	0.217	0.016	269000.	0.931	1.083	1.641	22.751	18.518	18.547
*-----	35 52.5	98 52.5	521000.	0.016	-0.185	283000.	1.149	1.301	1.641	22.752	18.489	18.518
*HUCMAC	36 0.0	98 52.5	522000.	1.456	1.255	297000.	1.366	1.518	1.641	22.752	18.459	18.489
*ORION	36 7.5	98 52.5	522000.	1.255	1.054	310000.	-0.058	0.093	1.640	22.753	18.430	18.459
*PHROSO	36 15.0	98 52.5	522000.	1.054	0.853	324000.	0.157	0.308	1.640	22.753	18.401	18.430
*TOGO	36 22.5	98 52.5	522000.	0.853	0.652	338000.	0.371	0.522	1.640	22.753	18.371	18.401
*WAYNOKA EAST	36 30.0	98 52.5	522000.	0.652	0.451	352000.	0.584	0.734	1.640	22.754	18.342	18.371
*AVARD	36 37.5	98 52.5	522000.	0.451	0.250	366000.	0.794	0.945	1.640	22.754	18.312	18.342
*TEGARDEN SE	36 45.0	98 52.5	522000.	0.250	0.049	380000.	1.004	1.154	1.640	22.755	18.282	18.312
*TEGARDEN NE	36 52.5	98 52.5	522000.	0.049	-0.152	394000.	1.211	1.361	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID			
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
*-----	37 0.0	98 52.5	523000.	1.488	1.287	408000.	1.417	1.567	1.640	22.756	18.223	18.252
*-----	33 37.5	99 0.0	508000.	1.338	1.109	33000.	0.280	0.460	1.640	22.743	18.999	19.027
*-----	33 45.0	99 0.0	508000.	1.109	0.879	47000.	0.498	0.678	1.640	22.743	18.972	18.999
*-----	33 52.5	99 0.0	508000.	0.879	0.650	61000.	0.717	0.897	1.640	22.744	18.944	18.972
*-----	34 0.0	99 0.0	508000.	0.650	0.420	75000.	0.937	1.117	1.640	22.744	18.916	18.944
*-----	34 7.5	99 0.0	508000.	0.420	0.191	89000.	1.158	1.337	1.640	22.745	18.888	18.916
*-----	34 15.0	99 0.0	508000.	0.191	-0.039	103000.	1.379	1.558	1.640	22.745	18.860	18.888
*-----	34 22.5	99 0.0	509000.	1.602	1.372	116000.	-0.040	0.138	1.640	22.746	18.832	18.860
*MANITOU	34 30.0	99 0.0	509000.	1.372	1.142	130000.	0.182	0.360	1.641	22.746	18.804	18.832
*SNYDER	34 37.5	99 0.0	509000.	1.142	0.913	144000.	0.404	0.582	1.641	22.747	18.776	18.804
*GLEN MTS	34 45.0	99 0.0	509000.	0.913	0.683	158000.	0.626	0.804	1.641	22.747	18.748	18.776
*RAINY MTN CREEK	34 52.5	99 0.0	509000.	0.683	0.454	172000.	0.848	1.026	1.641	22.748	18.719	18.748
*-----	35 0.0	99 0.0	509000.	0.454	0.224	186000.	1.070	1.248	1.641	22.748	18.691	18.719
*-----	35 7.5	99 0.0	509000.	0.224	-0.006	200000.	1.292	1.469	1.641	22.749	18.662	18.691
*-----	35 15.0	99 0.0	510000.	1.635	1.405	213000.	-0.127	0.050	1.641	22.749	18.633	18.662
*-----	35 22.5	99 0.0	510000.	1.405	1.176	227000.	0.095	0.271	1.641	22.750	18.605	18.633
*-----	35 30.0	99 0.0	510000.	1.176	0.946	241000.	0.316	0.492	1.641	22.750	18.576	18.605
*-----	35 37.5	99 0.0	510000.	0.946	0.716	255000.	0.536	0.712	1.641	22.751	18.547	18.576
*-----	35 45.0	99 0.0	510000.	0.716	0.487	269000.	0.755	0.931	1.641	22.751	18.518	18.547
*-----	35 52.5	99 0.0	510000.	0.487	0.257	283000.	0.974	1.149	1.641	22.752	18.489	18.518
*TALOGA	36 0.0	99 0.0	510000.	0.257	0.027	297000.	1.191	1.366	1.641	22.752	18.459	18.489
*CEILING	36 7.5	99 0.0	510000.	0.027	-0.202	311000.	1.408	1.583	1.640	22.753	18.430	18.459
*CEDARDALE	36 15.0	99 0.0	511000.	1.438	1.209	324000.	-0.017	0.157	1.640	22.753	18.401	18.430
*BELVA	36 22.5	99 0.0	511000.	1.209	0.979	338000.	0.197	0.371	1.640	22.753	18.371	18.401
*WAYNOKA WEST	36 30.0	99 0.0	511000.	0.979	0.749	352000.	0.410	0.584	1.640	22.754	18.342	18.371
*WAYNOKA NW	36 37.5	99 0.0	511000.	0.749	0.519	366000.	0.621	0.794	1.640	22.754	18.312	18.342
*TEGARDEN	36 45.0	99 0.0	511000.	0.519	0.290	380000.	0.830	1.004	1.640	22.755	18.282	18.312
*TEGARDEN NW	36 52.5	99 0.0	511000.	0.290	0.060	394000.	1.038	1.211	1.640	22.755	18.252	18.282
*-----	37 0.0	99 0.0	511000.	0.060	-0.170	408000.	1.244	1.417	1.640	22.756	18.223	18.252
*-----	33 37.5	99 7.5	496000.	0.685	0.427	33000.	0.076	0.280	1.640	22.743	18.999	19.027
*-----	33 45.0	99 7.5	496000.	0.427	0.168	47000.	0.295	0.498	1.640	22.743	18.972	18.999
*-----	33 52.5	99 7.5	496000.	0.168	-0.090	61000.	0.514	0.717	1.640	22.744	18.944	18.972
*-----	34 0.0	99 7.5	497000.	1.550	1.292	75000.	0.734	0.937	1.640	22.744	18.916	18.944
*-----	34 7.5	99 7.5	497000.	1.292	1.034	89000.	0.955	1.158	1.640	22.745	18.888	18.916
*-----	34 15.0	99 7.5	497000.	1.034	0.776	103000.	1.176	1.379	1.640	22.745	18.860	18.888
*-----	34 22.5	99 7.5	497000.	0.776	0.517	117000.	1.398	1.600	1.640	22.746	18.832	18.860
*TIPTON SE	34 30.0	99 7.5	497000.	0.517	0.259	130000.	-0.020	0.182	1.641	22.746	18.804	18.832
*LONG MTN	34 37.5	99 7.5	497000.	0.259	0.001	144000.	0.202	0.404	1.641	22.747	18.776	18.804
*ROOSEVELT	34 45.0	99 7.5	497000.	0.001	-0.258	158000.	0.425	0.626	1.641	22.747	18.748	18.776
*BABBS	34 52.5	99 7.5	498000.	1.383	1.125	172000.	0.647	0.848	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID			
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
*------	35 0.0	99 7.5	498000.	1.125	0.866	186000.	0.870	1.070	1.641	22.748	18.691*	18.719
*------	35 7.5	99 7.5	498000.	0.866	0.608	200000.	1.092	1.292	1.641	22.749	18.662*	18.691
*------	35 15.0	99 7.5	498000.	0.608	0.350	214000.	1.314	1.514	1.641	22.749	18.633*	18.662
*------	35 22.5	99 7.5	498000.	0.350	0.091	227000.	-0.105	0.095	1.641	22.750	18.605*	18.633
*------	35 30.0	99 7.5	498000.	0.091	-0.167	241000.	0.116	0.316	1.641	22.750	18.576*	18.605
*------	35 37.5	99 7.5	499000.	1.474	1.215	255000.	0.337	0.536	1.641	22.751	18.547*	18.576
*------	35 45.0	99 7.5	499000.	1.215	0.957	269000.	0.556	0.755	1.641	22.751	18.518*	18.547
*------	35 52.5	99 7.5	499000.	0.957	0.699	283000.	0.775	0.974	1.641	22.752	18.489*	18.518
*LENORA	36 0.0	99 7.5	499000.	0.699	0.440	297000.	0.993	1.191	1.641	22.752	18.459*	18.489
*MUTUAL NE	36 7.5	99 7.5	499000.	0.440	0.182	311000.	1.210	1.408	1.640	22.753	18.430*	18.459
*MOORELAND SE	36 15.0	99 7.5	499000.	0.182	-0.077	325000.	1.426	1.623	1.640	22.753	18.401*	18.430
*QUINLAN	36 22.5	99 7.5	500000.	1.564	1.305	338000.	0.000	0.197	1.640	22.753	18.371*	18.401
*FAIRVALLEY SE	36 30.0	99 7.5	500000.	1.305	1.047	352000.	0.213	0.410	1.640	22.754	18.342*	18.371
*FAIRVALLEY	36 37.5	99 7.5	500000.	1.047	0.789	366000.	0.424	0.621	1.640	22.754	18.312*	18.342
*FREEDOM	36 45.0	99 7.5	500000.	0.789	0.530	380000.	0.634	0.830	1.640	22.755	18.282*	18.312
*FREEDOM NE	36 52.5	99 7.5	500000.	0.530	0.272	394000.	0.842	1.038	1.640	22.755	18.252*	18.282
*------	37 0.0	99 7.5	500000.	0.272	0.013	408000.	1.049	1.244	1.640	22.756	18.223*	18.252
*------	33 37.5	99 15.0	484000.	0.031	-0.256	33000.	-0.152	0.076	1.640	22.743	18.999*	19.027
*------	33 45.0	99 15.0	485000.	1.384	1.097	47000.	0.067	0.295	1.640	22.743	18.972*	18.999
*------	33 52.5	99 15.0	485000.	1.097	0.810	61000.	0.287	0.514	1.640	22.744	18.944*	18.972
*------	34 0.0	99 15.0	485000.	0.810	0.523	75000.	0.507	0.734	1.640	22.744	18.916*	18.944
*------	34 7.5	99 15.0	485000.	0.523	0.236	89000.	0.728	0.955	1.640	22.745	18.888*	18.916
*------	34 15.0	99 15.0	485000.	0.236	-0.051	103000.	0.950	1.176	1.640	22.745	18.860*	18.888
*------	34 22.5	99 15.0	486000.	1.590	1.303	117000.	1.172	1.398	1.640	22.746	18.832*	18.860
*TIPTON	34 30.0	99 15.0	486000.	1.303	1.016	131000.	1.395	1.620	1.641	22.746	18.804*	18.832
*HEADRICK	34 37.5	99 15.0	486000.	1.016	0.729	144000.	-0.023	0.202	1.641	22.747	18.776*	18.804
*WARREN	34 45.0	99 15.0	486000.	0.729	0.442	158000.	0.200	0.425	1.641	22.747	18.748*	18.776
*------	34 52.5	99 15.0	486000.	0.442	0.155	172000.	0.422	0.647	1.641	22.748	18.719*	18.748
*------	35 0.0	99 15.0	486000.	0.155	-0.132	186000.	0.645	0.870	1.641	22.748	18.691*	18.719
*------	35 7.5	99 15.0	487000.	1.509	1.222	200000.	0.868	1.092	1.641	22.749	18.662*	18.691
*------	35 15.0	99 15.0	487000.	1.222	0.935	214000.	1.090	1.314	1.641	22.749	18.633*	18.662
*------	35 22.5	99 15.0	487000.	0.935	0.648	228000.	1.312	1.536	1.641	22.750	18.605*	18.633
*------	35 30.0	99 15.0	487000.	0.648	0.360	241000.	-0.107	0.116	1.641	22.750	18.576*	18.605
*------	35 37.5	99 15.0	487000.	0.360	0.073	255000.	0.114	0.337	1.641	22.751	18.547*	18.576
*------	35 45.0	99 15.0	487000.	0.073	-0.214	269000.	0.334	0.556	1.641	22.751	18.518*	18.547
*------	35 52.5	99 15.0	488000.	1.427	1.140	283000.	0.553	0.775	1.641	22.752	18.489*	18.518
*MUTUAL SW	36 0.0	99 15.0	488000.	1.140	0.853	297000.	0.771	0.993	1.641	22.752	18.459*	18.489
*MUTUAL	36 7.5	99 15.0	488000.	0.853	0.566	311000.	0.989	1.210	1.640	22.752	18.430*	18.459
*MOORELAND SW	36 15.0	99 15.0	488000.	0.566	0.279	325000.	1.205	1.426	1.640	22.753	18.401*	18.430
*MOORELAND	36 22.5	99 15.0	488000.	0.279	-0.009	339000.	1.420	1.640	1.640	22.753	18.371*	18.401
*FAIRVALLEY SW	36 30.0	99 15.0	489000.	1.632	1.345	352000.	-0.008	0.213	1.640	22.754	18.342*	18.371
ALABASTER CAVER	36 37.5	99 15.0	489000.	1.345	1.057	366000.	0.204	0.424	1.640	22.754	18.312*	18.342
*EDITH	36 45.0	99 15.0	489000.	1.057	0.770	380000.	0.415	0.634	1.640	22.755	18.282*	18.312
*FREEDOM NW	36 52.5	99 15.0	489000.	0.770	0.483	394000.	0.623	0.842	1.640	22.755	18.252*	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			ISF VERTICAL GRID			ISF HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL	
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
*-----	37 0.0	99 15.0	489000.	0.483	0.196	408000.	0.830	1.049	1.640	22.756	18.223*	18.252
*-----	33 37.5	99 22.5	473000.	1.017	0.702	34000.	1.236	1.488	1.640	22.743	18.999*	19.027
*-----	33 45.0	99 22.5	473000.	0.702	0.386	47000.	-0.165	0.067	1.640	22.743	18.972*	18.999
*-----	33 52.5	99 22.5	473000.	0.386	0.070	61000.	0.035	0.287	1.640	22.744	18.944*	18.972
*-----	34 0.0	99 22.5	473000.	0.070	-0.246	75000.	0.256	0.507	1.640	22.744	18.916*	18.944
*-----	34 7.5	99 22.5	474000.	1.395	1.079	89000.	0.477	0.728	1.640	22.745	18.888*	18.916
*-----	34 15.0	99 22.5	474000.	1.079	0.764	103000.	0.700	0.950	1.640	22.745	18.860*	18.888
*-----	34 22.5	99 22.5	474000.	0.764	0.448	117000.	0.922	1.172	1.640	22.746	18.832*	18.860
*ALTUS SE	34 30.0	99 22.5	474000.	0.448	0.132	131000.	1.145	1.395	1.641	22.746	18.804*	18.832
*ALTUS	34 37.5	99 22.5	474000.	0.132	-0.184	145000.	1.368	1.617	1.641	22.747	18.776*	18.804
*BLAIR	34 45.0	99 22.5	475000.	1.457	1.141	158000.	-0.049	0.200	1.641	22.747	18.748*	18.776
*LAKE ALTUS	34 52.5	99 22.5	475000.	1.141	0.826	172000.	0.174	0.422	1.641	22.748	18.719*	18.748
*-----	35 0.0	99 22.5	475000.	0.826	0.510	186000.	0.397	0.645	1.641	22.748	18.691*	18.719
*-----	35 7.5	99 22.5	475000.	0.510	0.194	200000.	0.620	0.868	1.641	22.749	18.662*	18.691
*-----	35 15.0	99 22.5	475000.	0.194	-0.122	214000.	0.843	1.090	1.641	22.749	18.633*	18.662
*-----	35 22.5	99 22.5	476000.	1.519	1.203	228000.	1.065	1.312	1.641	22.750	18.605*	18.633
*-----	35 30.0	99 22.5	476000.	1.203	0.888	242000.	1.287	1.534	1.641	22.750	18.576*	18.605
*-----	35 37.5	99 22.5	476000.	0.888	0.572	255000.	-0.132	0.114	1.641	22.751	18.547*	18.576
*-----	35 45.0	99 22.5	476000.	0.572	0.256	269000.	0.088	0.334	1.641	22.751	18.518*	18.547
*-----	35 52.5	99 22.5	476000.	0.256	-0.060	283000.	0.308	0.553	1.641	22.752	18.489*	18.518
*CAMARGO	36 0.0	99 22.5	477000.	1.581	1.265	297000.	0.527	0.771	1.641	22.752	18.459*	18.489
*VICI	36 7.5	99 22.5	477000.	1.265	0.949	311000.	0.744	0.989	1.640	22.753	18.430*	18.459
*SHARON	36 15.0	99 22.5	477000.	0.949	0.633	325000.	0.961	1.205	1.640	22.753	18.401*	18.430
*WOODWARD NE	36 22.5	99 22.5	477000.	0.633	0.318	339000.	1.176	1.420	1.640	22.754	18.371*	18.401
SLEEPING BEAR C	36 30.0	99 22.5	477000.	0.318	0.002	353000.	1.389	1.633	1.640	22.754	18.342*	18.371
SLEEPING BEAR C	36 37.5	99 22.5	477000.	0.002	-0.314	366000.	-0.039	0.204	1.640	22.754	18.312*	18.342
*SELMAN SE	36 45.0	99 22.5	478000.	1.326	1.010	380000.	0.172	0.415	1.640	22.755	18.282*	18.312
*LOOKOUT	36 52.5	99 22.5	478000.	1.010	0.694	394000.	0.381	0.623	1.640	22.755	18.252*	18.282
*-----	37 0.0	99 22.5	478000.	0.694	0.378	408000.	0.588	0.830	1.640	22.756	18.223*	18.252
*-----	33 37.5	99 30.0	461000.	0.363	0.018	34000.	0.960	1.236	1.640	22.743	18.999*	19.027
*-----	33 45.0	99 30.0	461000.	0.018	-0.326	48000.	1.180	1.455	1.640	22.743	18.972*	18.999
*-----	33 52.5	99 30.0	462000.	1.314	0.970	61000.	-0.240	0.035	1.640	22.744	18.944*	18.972
*-----	34 0.0	99 30.0	462000.	0.970	0.626	75000.	-0.019	0.256	1.640	22.744	18.916*	18.944
*-----	34 7.5	99 30.0	462000.	0.626	0.281	89000.	0.203	0.477	1.640	22.745	18.888*	18.916
*-----	34 15.0	99 30.0	462000.	0.281	-0.063	103000.	0.425	0.700	1.640	22.745	18.860*	18.888
*-----	34 22.5	99 30.0	463000.	1.577	1.233	117000.	0.648	0.922	1.640	22.746	18.832*	18.860
*OLUSTLE	34 30.0	99 30.0	463000.	1.233	0.889	131000.	0.872	1.145	1.641	22.746	18.804*	18.832
*MARTHA	34 37.5	99 30.0	463000.	0.889	0.544	145000.	1.095	1.368	1.641	22.747	18.776*	18.804
*HESTER	34 45.0	99 30.0	463000.	0.544	0.200	159000.	1.319	1.591	1.641	22.747	18.748*	18.776
*GRANITE	34 52.5	99 30.0	463000.	0.200	-0.145	172000.	-0.098	0.174	1.641	22.748	18.719*	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID				
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	HORIZONTAL [N]BOTTOM
*------	35 0.0	99 30.0	464000.	1.496	1.152	186000.	0.126	0.347	1.641	22.748	18.691	18.719
*------	35 7.5	99 30.0	464000.	1.152	0.807	200000.	0.349	0.620	1.641	22.749	18.662	18.691
*------	35 15.0	99 30.0	464000.	0.807	0.463	214000.	0.572	0.843	1.641	22.749	18.633	18.662
*------	35 22.5	99 30.0	464000.	0.463	0.118	228000.	0.795	1.065	1.641	22.750	18.605	18.633
*------	35 30.0	99 30.0	464000.	0.118	-0.226	242000.	1.017	1.287	1.641	22.750	18.576	18.605
*------	35 37.5	99 30.0	465000.	1.415	1.070	256000.	1.239	1.508	1.641	22.751	18.547	18.576
*------	35 45.0	99 30.0	465000.	1.070	0.725	269000.	-0.181	0.088	1.641	22.751	18.518	18.547
*------	35 52.5	99 30.0	465000.	0.725	0.381	283000.	0.039	0.308	1.641	22.752	18.489	18.518
*VICI SW	36 0.0	99 30.0	465000.	0.381	0.036	297000.	0.258	0.527	1.641	22.752	18.459	18.489
*VICI NW	36 7.5	99 30.0	465000.	0.036	-0.308	311000.	0.476	0.744	1.640	22.752	18.430	18.459
*WOODWARD SW	36 15.0	99 30.0	466000.	1.332	0.988	325000.	0.693	0.961	1.640	22.753	18.401	18.430
*WOODWARD	36 22.5	99 30.0	466000.	0.988	0.643	339000.	0.909	1.176	1.640	22.753	18.371	18.401
SLEEPING BEAR C	36 30.0	99 30.0	466000.	0.643	0.299	353000.	1.123	1.389	1.640	22.754	18.342	18.371
SLEEPING BEAR C	36 37.5	99 30.0	466000.	0.299	-0.046	367000.	1.336	1.602	1.640	22.754	18.312	18.342
*SELMAN	36 45.0	99 30.0	467000.	1.595	1.250	380000.	-0.094	0.172	1.640	22.755	18.282	18.312
*SELMAN NW	36 52.5	99 30.0	467000.	1.250	0.905	394000.	0.116	0.381	1.640	22.755	18.252	18.282
*------	37 0.0	99 30.0	467000.	0.905	0.561	408000.	0.323	0.588	1.640	22.756	18.223	18.252
*------	33 37.5	99 37.5	450000.	1.348	0.975	34000.	0.660	0.960	1.640	22.743	18.999	19.027
*------	33 45.0	99 37.5	450000.	0.975	0.602	48000.	0.880	1.180	1.640	22.743	18.972	18.999
*------	33 52.5	99 37.5	450000.	0.602	0.229	62000.	1.101	1.400	1.640	22.744	18.944	18.972
*------	34 0.0	99 37.5	450000.	0.229	-0.144	76000.	1.323	1.621	1.640	22.744	18.916	18.944
*------	34 7.5	99 37.5	451000.	1.496	1.123	89000.	-0.095	0.203	1.640	22.745	18.888	18.916
*------	34 15.0	99 37.5	451000.	1.123	0.750	103000.	0.128	0.425	1.640	22.745	18.860	18.888
*------	34 22.5	99 37.5	451000.	0.750	0.377	117000.	0.351	0.648	1.640	22.746	18.832	18.860
*PRAINIE HILL	34 30.0	99 37.5	451000.	0.377	0.004	131000.	0.575	0.872	1.641	22.746	18.804	18.832
*DUKE	34 37.5	99 37.5	451000.	0.004	-0.369	145000.	0.799	1.095	1.641	22.747	18.776	18.804
*MANGUM SOUTH	34 45.0	99 37.5	452000.	1.272	0.898	159000.	1.023	1.319	1.641	22.747	18.748	18.776
*MANGUM NORTH	34 52.5	99 37.5	452000.	0.898	0.525	173000.	1.247	1.543	1.641	22.748	18.719	18.748
*------	35 0.0	99 37.5	452000.	0.525	0.152	186000.	-0.170	0.126	1.641	22.748	18.691	18.719
*------	35 7.5	99 37.5	452000.	0.152	-0.221	200000.	0.054	0.349	1.641	22.749	18.662	18.691
*------	35 15.0	99 37.5	453000.	1.420	1.047	214000.	0.278	0.572	1.641	22.749	18.633	18.662
*------	35 22.5	99 37.5	453000.	1.047	0.673	228000.	0.501	0.795	1.641	22.750	18.605	18.633
*------	35 30.0	99 37.5	453000.	0.673	0.300	242000.	0.724	1.017	1.641	22.750	18.576	18.605
*------	35 37.5	99 37.5	453000.	0.300	-0.073	256000.	0.946	1.239	1.641	22.751	18.547	18.576
*ROLL SE	35 45.0	99 37.5	454000.	1.568	1.195	270000.	1.167	1.460	1.641	22.751	18.518	18.547
*ROLL NE	35 52.5	99 37.5	454000.	1.195	0.821	283000.	-0.253	0.039	1.641	22.752	18.489	18.518
*HARMON SE	36 0.0	99 37.5	454000.	0.821	0.448	297000.	-0.033	0.258	1.641	22.752	18.459	18.489
*HARMON	36 7.5	99 37.5	454000.	0.448	0.075	311000.	0.185	0.476	1.640	22.753	18.430	18.459
*FARGO SE	36 15.0	99 37.5	454000.	0.075	-0.299	325000.	0.402	0.693	1.640	22.753	18.401	18.430
*FARGO	36 22.5	99 37.5	455000.	1.342	0.969	339000.	0.619	0.909	1.640	22.753	18.371	18.401
*FT SUPPLY	36 30.0	99 37.5	455000.	0.969	0.596	353000.	0.833	1.123	1.640	22.754	18.342	18.371
*FT SUPPLY NE	36 37.5	99 37.5	455000.	0.596	0.222	367000.	1.046	1.336	1.640	22.754	18.312	18.342
*BUFFALO SE	36 45.0	99 37.5	455000.	0.222	-0.151	381000.	1.258	1.547	1.640	22.755	18.282	18.312
*BUFFALO NE	36 52.5	99 37.5	456000.	1.489	1.116	394000.	-0.173	0.116	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID			HORIZONTAL	
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
*------	37 0.0	99 37.5	456000.	1.116	0.742	408000.	0.035	0.323	1.640	22.756	18.223	18.252
*------	33 37.5	99 45.0	438000.	0.693	0.291	34000.	0.336	0.660	1.640	22.743	18.999	19.027
*------	33 45.0	99 45.0	438000.	0.291	-0.111	48000.	0.556	0.880	1.640	22.743	18.972	18.999
*------	33 52.5	99 45.0	439000.	1.530	1.128	62000.	0.778	1.101	1.640	22.744	18.944	18.972
*------	34 0.0	99 45.0	439000.	1.128	0.726	76000.	1.000	1.323	1.640	22.744	18.916	18.944
*------	34 7.5	99 45.0	439000.	0.726	0.324	90000.	1.223	1.545	1.640	22.745	18.888	18.916
*------	34 15.0	99 45.0	439000.	0.324	-0.077	103000.	-0.194	0.128	1.640	22.745	18.860	18.888
*------	34 22.5	99 45.0	440000.	1.563	1.161	117000.	0.030	0.351	1.640	22.746	18.832	18.860
*DUKE SW	34 30.0	99 45.0	440000.	1.161	0.760	131000.	0.254	0.575	1.641	22.746	18.804	18.832
*MCQUEEN	34 37.5	99 45.0	440000.	0.760	0.358	145000.	0.478	0.799	1.641	22.747	18.776	18.804
*RUSSELL	34 45.0	99 45.0	440000.	0.358	-0.044	159000.	0.703	1.023	1.641	22.747	18.748	18.776
*REED	34 52.5	99 45.0	441000.	1.597	1.195	173000.	0.928	1.247	1.641	22.748	18.719	18.748
*------	35 0.0	99 45.0	441000.	1.195	0.793	187000.	1.152	1.471	1.641	22.748	18.691	18.719
*------	35 7.5	99 45.0	441000.	0.793	0.391	200000.	-0.264	0.054	1.641	22.749	18.662	18.691
*------	35 15.0	99 45.0	441000.	0.391	-0.011	214000.	-0.040	0.278	1.641	22.749	18.633	18.662
*------	35 22.5	99 45.0	442000.	1.630	1.228	228000.	0.184	0.501	1.641	22.750	18.605	18.633
*------	35 30.0	99 45.0	442000.	1.228	0.826	242000.	0.407	0.724	1.641	22.750	18.576	18.605
*------	35 37.5	99 45.0	442000.	0.826	0.424	256000.	0.630	0.946	1.641	22.751	18.547	18.576
*ROLL	35 45.0	99 45.0	442000.	0.424	0.022	270000.	0.851	1.167	1.641	22.751	18.518	18.547
*ROLL NW	35 52.5	99 45.0	442000.	0.022	-0.380	284000.	1.072	1.388	1.641	22.752	18.489	18.518
*HARMON SW	36 0.0	99 45.0	443000.	1.261	0.859	298000.	1.292	1.607	1.641	22.752	18.459	18.489
*HARMON NW	36 7.5	99 45.0	443000.	0.859	0.457	311000.	-0.129	0.185	1.640	22.752	18.430	18.459
*FARGO SW	36 15.0	99 45.0	443000.	0.457	0.055	325000.	0.088	0.402	1.640	22.753	18.401	18.430
*FARGO NW	36 22.5	99 45.0	443000.	0.055	-0.347	339000.	0.305	0.619	1.640	22.753	18.371	18.401
*MAY EAST	36 30.0	99 45.0	444000.	1.294	0.892	353000.	0.520	0.833	1.640	22.754	18.342	18.371
*FT SUPPLY NW	36 37.5	99 45.0	444000.	0.892	0.490	367000.	0.734	1.046	1.640	22.754	18.312	18.342
*BUFFALO	36 45.0	99 45.0	444000.	0.490	0.088	381000.	0.946	1.258	1.640	22.755	18.282	18.312
*BUFFALO NW	36 52.5	99 45.0	444000.	0.088	-0.314	395000.	1.156	1.467	1.640	22.755	18.252	18.282
*------	37 0.0	99 45.0	445000.	1.326	0.924	408000.	-0.276	0.035	1.640	22.756	18.223	18.252
*------	33 37.5	99 52.5	426000.	0.037	-0.393	34000.	-0.012	0.336	1.640	22.743	18.999	19.027
*------	33 45.0	99 52.5	427000.	1.247	0.817	48000.	0.209	0.556	1.640	22.743	18.972	18.999
*------	33 52.5	99 52.5	427000.	0.817	0.386	62000.	0.431	0.778	1.640	22.744	18.944	18.972
*------	34 0.0	99 52.5	427000.	0.386	-0.044	76000.	0.653	1.000	1.640	22.744	18.916	18.944
*------	34 7.5	99 52.5	428000.	1.596	1.166	90000.	0.877	1.223	1.640	22.745	18.888	18.916
*------	34 15.0	99 52.5	428000.	1.165	0.735	104000.	1.101	1.446	1.640	22.745	18.860	18.888
*------	34 22.5	99 52.5	428000.	0.735	0.305	117000.	-0.315	0.030	1.640	22.746	18.832	18.860
*------	34 30.0	99 52.5	428000.	0.305	-0.126	131000.	-0.091	0.254	1.641	22.746	18.804	18.832
*------	34 37.5	99 52.5	429000.	1.515	1.084	145000.	0.134	0.478	1.641	22.747	18.776	18.804
*SHREWDER	34 45.0	99 52.5	429000.	1.084	0.654	159000.	0.359	0.703	1.641	22.747	18.748	18.776
*VINSON	34 52.5	99 52.5	429000.	0.654	0.223	173000.	0.585	0.928	1.641	22.748	18.719	18.748

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)					
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	HORIZONTAL [N]BOTTOM
*-----	35 0.0	99 52.5	429000.	0.223	-0.207	187000.	0.810	1.152	1.641	22.748	18.691	18.719
*-----	35 7.5	99 52.5	430000.	1.433	1.003	201000.	1.035	1.377	1.641	22.749	18.662	18.691
*-----	35 15.0	99 52.5	430000.	1.003	0.572	215000.	1.259	1.601	1.641	22.749	18.633	18.662
*-----	35 22.5	99 52.5	430000.	0.572	0.142	228000.	-0.157	0.184	1.641	22.750	18.605	18.633
*-----	35 30.0	99 52.5	430000.	0.142	-0.289	242000.	0.067	0.407	1.641	22.750	18.576	18.605
*-----	35 37.5	99 52.5	431000.	1.352	0.921	256000.	0.290	0.630	1.641	22.751	18.547	18.576
*CRAWFORD	35 45.0	99 52.5	431000.	0.921	0.491	270000.	0.512	0.851	1.641	22.751	18.518	18.547
*ANTELOPE HILLS	35 52.5	99 52.5	431000.	0.491	0.060	284000.	0.734	1.072	1.641	22.752	18.489	18.518
*ARNETT SE	36 0.0	99 52.5	431000.	0.060	-0.371	298000.	0.954	1.292	1.641	22.752	18.459	18.489
*ARNETT	36 7.5	99 52.5	432000.	1.270	0.839	312000.	1.174	1.511	1.640	22.753	18.430	18.459
*GAGE	36 15.0	99 52.5	432000.	0.839	0.409	325000.	-0.249	0.088	1.640	22.753	18.401	18.430
*SHATTUCK NE	36 22.5	99 52.5	432000.	0.409	-0.022	339000.	-0.032	0.305	1.640	22.753	18.371	18.401
*MAY WEST	36 30.0	99 52.5	433000.	1.619	1.188	353000.	0.184	0.520	1.640	22.754	18.342	18.371
*LAVERNE NE	36 37.5	99 52.5	433000.	1.188	0.757	367000.	0.398	0.734	1.640	22.754	18.312	18.342
*ROSSTON SE	36 45.0	99 52.5	433000.	0.757	0.326	381000.	0.611	0.946	1.640	22.755	18.282	18.312
*ROSSTON NE	36 52.5	99 52.5	433000.	0.326	-0.104	395000.	0.822	1.156	1.640	22.755	18.253	18.282
*-----	37 0.0	99 52.5	434000.	1.536	1.105	409000.	1.030	1.364	1.640	22.756	18.223	18.253
*-----	33 37.5	100 0.0	415000.	1.021	0.562	35000.	1.256	1.628	1.640	22.743	18.999	19.027
*-----	33 45.0	100 0.0	415000.	0.562	0.103	48000.	-0.163	0.209	1.640	22.743	18.972	18.999
*-----	33 52.5	100 0.0	415000.	0.103	-0.356	62000.	0.060	0.431	1.640	22.744	18.944	18.972
*-----	34 0.0	100 0.0	416000.	1.284	0.825	76000.	0.283	0.653	1.640	22.744	18.916	18.944
*-----	34 7.5	100 0.0	416000.	0.825	0.366	90000.	0.507	0.877	1.640	22.745	18.888	18.916
*-----	34 15.0	100 0.0	416000.	0.366	-0.093	104000.	0.731	1.101	1.640	22.745	18.860	18.888
*-----	34 22.5	100 0.0	417000.	1.547	1.088	118000.	0.956	1.325	1.640	22.746	18.832	18.860
*-----	34 30.0	100 0.0	417000.	1.088	0.629	132000.	1.182	1.550	1.641	22.746	18.804	18.832
*-----	34 37.5	100 0.0	417000.	0.629	0.170	145000.	-0.234	0.134	1.641	22.747	18.776	18.804
*MC KNIGHT	34 45.0	100 0.0	417000.	0.170	-0.290	159000.	-0.008	0.359	1.641	22.747	18.748	18.776
*MADGE	34 52.5	100 0.0	418000.	1.351	0.892	173000.	0.218	0.585	1.641	22.748	18.719	18.748
*-----	35 0.0	100 0.0	418000.	0.892	0.433	187000.	0.444	0.810	1.641	22.748	18.691	18.719
*-----	35 7.5	100 0.0	418000.	0.433	-0.027	201000.	0.669	1.035	1.641	22.749	18.662	18.691
*-----	35 15.0	100 0.0	419000.	1.614	1.155	215000.	0.894	1.259	1.641	22.749	18.633	18.662
*-----	35 22.5	100 0.0	419000.	1.155	0.696	229000.	1.119	1.484	1.641	22.750	18.605	18.633
*-----	35 30.0	100 0.0	419000.	0.696	0.236	242000.	-0.297	0.067	1.641	22.750	18.576	18.605
*-----	35 37.5	100 0.0	419000.	0.236	-0.223	256000.	-0.074	0.290	1.641	22.751	18.547	18.576
*DURHAM	35 45.0	100 0.0	420000.	1.418	0.959	270000.	0.149	0.512	1.641	22.751	18.518	18.547
*ANTELOPE HILLS	35 52.5	100 0.0	420000.	0.959	0.499	284000.	0.371	0.734	1.641	22.752	18.489	18.518
*ARNETT SW	36 0.0	100 0.0	420000.	0.499	0.040	298000.	0.593	0.954	1.641	22.752	18.459	18.489
*GOODWIN	36 7.5	100 0.0	420000.	0.040	-0.420	312000.	0.813	1.174	1.640	22.752	18.430	18.459
*SHATTUCK	36 15.0	100 0.0	421000.	1.221	0.762	326000.	1.032	1.392	1.640	22.753	18.401	18.430
*SHATTUCK NW	36 22.5	100 0.0	421000.	0.762	0.302	340000.	1.249	1.609	1.640	22.754	18.371	18.401
*LAVERNE SW	36 30.0	100 0.0	421000.	0.302	-0.157	353000.	-0.175	0.184	1.640	22.754	18.342	18.371
*LAVERNE	36 37.5	100 0.0	422000.	1.483	1.024	367000.	0.039	0.398	1.640	22.754	18.312	18.342
*ROSSTON	36 45.0	100 0.0	422000.	1.024	0.564	381000.	0.253	0.611	1.640	22.755	18.282	18.312
*ROSSTON NW	36 52.5	100 0.0	422000.	0.564	0.105	395000.	0.464	0.822	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL	
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
*-----	37 0.0	100 0.0	422000.	0.105	-0.355	409000.	0.673	1.030	1.640	22.756	18.223	18.252
*-----	33 37.5	100 7.5	403000.	0.365	-0.123	35000.	0.860	1.256	1.640	22.743	18.999	19.027
*-----	33 45.0	100 7.5	404000.	1.517	1.029	49000.	1.062	1.477	1.640	22.743	18.972	18.999
*-----	33 52.5	100 7.5	404000.	1.029	0.541	62000.	-0.335	0.080	1.640	22.744	18.944	18.972
*-----	34 0.0	100 7.5	404000.	0.541	0.054	76000.	-0.112	0.283	1.640	22.744	18.916	18.944
*-----	34 7.5	100 7.5	404000.	0.054	-0.434	90000.	0.113	0.507	1.640	22.745	18.888	18.916
*-----	34 15.0	100 7.5	405000.	1.206	0.718	104000.	0.338	0.731	1.640	22.745	18.860	18.888
*-----	34 22.5	100 7.5	405000.	0.718	0.230	118000.	0.564	0.956	1.640	22.746	18.832	18.860
*-----	34 30.0	100 7.5	405000.	0.230	-0.258	132000.	0.790	1.182	1.641	22.746	18.804	18.832
*-----	34 37.5	100 7.5	406000.	1.303	0.895	146000.	1.016	1.407	1.641	22.747	18.776	18.804
*-----	34 45.0	100 7.5	406000.	0.895	0.407	160000.	1.242	1.633	1.641	22.747	18.748	18.776
*-----	34 52.5	100 7.5	406000.	0.407	-0.081	173000.	-0.172	0.218	1.641	22.748	18.719	18.748
*-----	35 0.0	100 7.5	407000.	1.560	1.072	187000.	0.054	0.444	1.641	22.748	18.691	18.719
*-----	35 7.5	100 7.5	407000.	1.072	0.584	201000.	0.280	0.669	1.641	22.749	18.662	18.691
*-----	35 15.0	100 7.5	407000.	0.584	0.096	215000.	0.506	0.894	1.641	22.749	18.633	18.662
*-----	35 22.5	100 7.5	407000.	0.096	-0.392	229000.	0.731	1.119	1.641	22.750	18.605	18.633
*-----	35 30.0	100 7.5	408000.	1.249	0.761	243000.	0.956	1.344	1.641	22.750	18.576	18.605
*-----	35 37.5	100 7.5	408000.	0.761	0.273	257000.	1.181	1.567	1.641	22.751	18.547	18.576
*-----	35 45.0	100 7.5	408000.	0.273	-0.215	270000.	-0.237	0.149	1.641	22.751	18.518	18.547
*-----	35 52.5	100 7.5	409000.	1.426	0.938	284000.	-0.014	0.371	1.641	22.752	18.489	18.518
*-----	36 0.0	100 7.5	409000.	0.938	0.450	298000.	0.208	0.593	1.641	22.752	18.459	18.489
*-----	36 7.5	100 7.5	409000.	0.450	-0.039	312000.	0.428	0.813	1.640	22.753	18.430	18.459
*-----	36 15.0	100 7.5	410000.	1.602	1.114	326000.	0.648	1.032	1.640	22.753	18.401	18.430
*MAGOUN	36 22.5	100 7.5	410000.	1.114	0.626	340000.	0.868	1.249	1.640	22.753	18.371	18.401
*SLAPOUT	36 30.0	100 7.5	410000.	0.626	0.138	354000.	1.083	1.465	1.640	22.754	18.342	18.371
*LOGAN NE	36 37.5	100 7.5	410000.	0.138	-0.350	367000.	-0.342	0.039	1.640	22.754	18.312	18.342
*GATE	36 45.0	100 7.5	411000.	1.290	0.802	381000.	-0.129	0.253	1.640	22.755	18.282	18.312
*GATE NE	36 52.5	100 7.5	411000.	0.802	0.314	395000.	0.083	0.464	1.640	22.755	18.252	18.282
*-----	37 0.0	100 7.5	411000.	0.314	-0.174	409000.	0.293	0.673	1.640	22.756	18.223	18.252
*FOLLETT	36 22.5	100 15.0	399000.	1.466	0.949	340000.	0.460	0.866	1.640	22.753	18.371	18.401
*LOGAN	36 30.0	100 15.0	399000.	0.949	0.432	354000.	0.677	1.083	1.640	22.754	18.342	18.371
*LOGAN NW	36 37.5	100 15.0	399000.	0.432	-0.084	368000.	0.893	1.298	1.640	22.754	18.312	18.342
*KNOWLES	36 45.0	100 15.0	400000.	1.556	1.039	382000.	1.107	1.512	1.640	22.755	18.282	18.312
*GATE NW	36 52.5	100 15.0	400000.	1.039	0.522	395000.	-0.321	0.083	1.640	22.755	18.252	18.282
*-----	37 0.0	100 15.0	400000.	0.522	0.005	409000.	-0.110	0.293	1.640	22.756	18.223	18.252
*DARHOUZETT	36 22.5	100 22.5	387000.	0.177	-0.369	340000.	0.030	0.460	1.640	22.753	18.371	18.401
*CLEAR LAKE SE	36 30.0	100 22.5	388000.	1.272	0.726	354000.	0.248	0.677	1.640	22.754	18.342	18.371
*CLEAR LAKE	36 37.5	100 22.5	388000.	0.726	0.181	368000.	0.465	0.893	1.640	22.754	18.312	18.342
*MOCANE SE	36 45.0	100 22.5	388000.	0.181	-0.365	382000.	0.680	1.107	1.640	22.755	18.282	18.312
*MOCANE	36 52.5	100 22.5	389000.	1.276	0.730	396000.	0.893	1.320	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)	
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)				
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
IRISH FLATS SE	37 0.0	100 22.5	389000.	0.730	0.184	410000.	1.105	1.531	1.640	22.756	18.223	18.252
GAYLORD	36 22.5	100 30.0	376000.	0.528	-0.046	340000.	-0.423	0.030	1.640	22.753	18.371	18.401
CLEAR LAKE SW	36 30.0	100 30.0	377000.	1.594	1.020	354000.	-0.204	0.248	1.640	22.754	18.342	18.371
CLEAR LAKE NW	36 37.5	100 30.0	377000.	1.020	0.446	368000.	0.013	0.465	1.640	22.754	18.312	18.342
MOCANE SW	36 45.0	100 30.0	377000.	0.446	-0.129	382000.	0.229	0.680	1.640	22.755	18.282	18.312
MOCANE NW	36 52.5	100 30.0	378000.	1.512	0.937	396000.	0.443	0.893	1.640	22.755	18.252	18.282
IRISH FLATS	37 0.0	100 30.0	378000.	0.937	0.363	410000.	0.655	1.105	1.640	22.756	18.223	18.252
------	36 22.5	100 37.5	365000.	0.878	0.275	341000.	0.742	1.218	1.640	22.753	18.371	18.401
------	36 30.0	100 37.5	365000.	0.275	-0.328	355000.	0.962	1.437	1.640	22.754	18.342	18.371
------	36 37.5	100 37.5	366000.	1.313	0.710	368000.	-0.461	0.013	1.640	22.754	18.312	18.342
------	36 45.0	100 37.5	366000.	0.710	0.107	382000.	-0.245	0.229	1.640	22.755	18.282	18.312
------	36 52.5	100 37.5	366000.	0.107	-0.496	396000.	-0.030	0.443	1.640	22.755	18.252	18.282
KISMET SE	37 0.0	100 37.5	367000.	1.144	0.541	410000.	0.183	0.655	1.640	22.756	18.223	18.252
------	36 22.5	100 45.0	354000.	1.228	0.596	341000.	0.243	0.742	1.640	22.753	18.371	18.401
------	36 30.0	100 45.0	354000.	0.596	-0.036	355000.	0.463	0.962	1.640	22.754	18.342	18.371
------	36 37.5	100 45.0	355000.	1.605	0.973	369000.	0.682	1.180	1.640	22.754	18.312	18.342
------	36 45.0	100 45.0	355000.	0.973	0.342	383000.	0.899	1.396	1.640	22.755	18.282	18.312
------	36 52.5	100 45.0	355000.	0.342	-0.290	397000.	1.115	1.611	1.640	22.755	18.252	18.282
------	37 0.0	100 45.0	356000.	1.350	0.718	410000.	-0.312	0.183	1.640	22.756	18.223	18.252
------	36 22.5	100 52.5	343000.	1.577	0.917	341000.	-0.280	0.243	1.640	22.753	18.371	18.401
------	36 30.0	100 52.5	343000.	0.917	0.256	355000.	-0.059	0.463	1.640	22.754	18.342	18.371
------	36 37.5	100 52.5	343000.	0.256	-0.404	369000.	0.161	0.682	1.640	22.754	18.312	18.342
------	36 45.0	100 52.5	344000.	1.236	0.576	383000.	0.379	0.899	1.640	22.755	18.282	18.312
------	36 52.5	100 52.5	344000.	0.576	-0.085	397000.	0.596	1.115	1.640	22.755	18.252	18.282
------	37 0.0	100 52.5	345000.	1.556	0.895	411000.	0.810	1.329	1.640	22.756	18.223	18.252
------	36 22.5	101 0.0	331000.	0.285	-0.405	342000.	0.816	1.361	1.640	22.753	18.371	18.401
------	36 30.0	101 0.0	332000.	1.237	0.547	356000.	1.038	1.583	1.640	22.754	18.342	18.371
------	36 37.5	101 0.0	332000.	0.547	-0.142	369000.	-0.383	0.161	1.640	22.754	18.312	18.342
------	36 45.0	101 0.0	333000.	1.499	0.809	383000.	-0.164	0.379	1.640	22.755	18.282	18.312
------	36 52.5	101 0.0	333000.	0.809	0.120	397000.	0.053	0.596	1.640	22.755	18.252	18.282
------	37 0.0	101 0.0	333000.	0.120	-0.569	411000.	0.269	0.810	1.640	22.756	18.223	18.252
------	36 22.5	101 7.5	320000.	0.632	-0.086	342000.	0.247	0.816	1.640	22.753	18.371	18.401
HARDESTY SE	36 30.0	101 7.5	321000.	1.556	0.838	356000.	0.470	1.038	1.640	22.754	18.342	18.371
HARDESTY NE	36 37.5	101 7.5	321000.	0.838	0.120	370000.	0.691	1.258	1.640	22.754	18.312	18.342
ADAMS	36 45.0	101 7.5	321000.	0.120	-0.598	384000.	0.911	1.477	1.640	22.755	18.282	18.312
TYRONE	36 52.5	101 7.5	322000.	1.042	0.324	397000.	-0.512	0.053	1.640	22.755	18.252	18.282
------	37 0.0	101 7.5	322000.	0.324	-0.394	411000.	-0.296	0.269	1.640	22.756	18.223	18.252
------	36 22.5	101 15.0	309000.	0.980	0.233	342000.	-0.346	0.247	1.640	22.753	18.371	18.401
HARDESTY	36 30.0	101 15.0	309000.	0.233	-0.514	356000.	-0.122	0.470	1.640	22.754	18.342	18.371
OPTIMA DAM	36 37.5	101 15.0	310000.	1.127	0.380	370000.	0.101	0.691	1.640	22.754	18.312	18.342
HOOKER	36 45.0	101 15.0	310000.	0.380	-0.366	384000.	0.322	0.911	1.640	22.755	18.282	18.312
------	36 52.5	101 15.0	311000.	1.275	0.528	398000.	0.541	1.129	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID INTERVAL		HORIZONTAL		
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	(INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
*-----	37 0.0	101 15.0	311000.	0.528	-0.219	412000.	0.758	1.345	1.640	22.756	18.223	18.252
*-----	36 22.5	101 22.5	298000.	1.326	0.550	343000.	0.680	1.296	1.640	22.753	18.371	18.401
*GUYMON SE	36 30.0	101 22.5	298000.	0.550	-0.225	357000.	0.905	1.520	1.640	22.754	18.342	18.371
*GUYMON NE	36 37.5	101 22.5	299000.	1.416	0.641	370000.	-0.513	0.101	1.640	22.754	18.312	18.342
*OPTIMA	36 45.0	101 22.5	299000.	0.641	-0.135	384000.	-0.291	0.322	1.640	22.755	18.282	18.312
*STRAIGHT NE	36 52.5	101 22.5	300000.	1.506	0.730	398000.	-0.071	0.541	1.640	22.755	18.252	18.282
*-----	37 0.0	101 22.5	300000.	0.730	-0.045	412000.	0.147	0.758	1.640	22.756	18.223	18.252
*-----	36 22.5	101 30.0	286000.	0.030	-0.774	343000.	0.041	0.680	1.640	22.753	18.371	18.401
*GUYMON SW	36 30.0	101 30.0	287000.	0.867	0.063	357000.	0.267	0.905	1.640	22.754	18.342	18.371
*GUYMON	36 37.5	101 30.0	287000.	0.063	-0.741	371000.	0.492	1.128	1.640	22.754	18.312	18.342
*STRAIGHT SW	36 45.0	101 30.0	288000.	0.900	0.096	385000.	0.714	1.350	1.640	22.755	18.282	18.312
*STRAIGHT	36 52.5	101 30.0	288000.	0.096	-0.708	399000.	0.935	1.570	1.640	22.755	18.252	18.282
*-----	37 0.0	101 30.0	289000.	0.932	0.128	412000.	-0.486	0.147	1.640	22.756	18.223	18.252
*-----	36 22.5	101 37.5	275000.	0.375	-0.458	343000.	-0.621	0.041	1.640	22.754	18.371	18.401
*GOODWELL SE	36 30.0	101 37.5	276000.	1.183	0.350	357000.	-0.394	0.267	1.640	22.754	18.342	18.371
*GOODWELL NE	36 37.5	101 37.5	276000.	0.350	-0.483	371000.	-0.168	0.492	1.640	22.754	18.312	18.342
*HOUGH	36 45.0	101 37.5	277000.	1.159	0.326	385000.	0.056	0.714	1.640	22.755	18.282	18.312
*HOUGH NE	36 52.5	101 37.5	277000.	0.326	-0.507	399000.	0.278	0.935	1.640	22.755	18.252	18.282
*-----	37 0.0	101 37.5	278000.	1.134	0.300	413000.	0.498	1.155	1.640	22.756	18.223	18.252
*-----	36 22.5	101 45.0	264000.	0.719	-0.143	344000.	0.336	1.021	1.640	22.753	18.371	18.401
*GOODWELL	36 30.0	101 45.0	265000.	1.499	0.637	358000.	0.564	1.248	1.640	22.754	18.342	18.371
*GOODWELL NW	36 37.5	101 45.0	265000.	0.637	-0.225	372000.	0.790	1.473	1.640	22.754	18.312	18.342
*HOUGH SW	36 45.0	101 45.0	266000.	1.416	0.555	385000.	-0.626	0.056	1.640	22.755	18.282	18.312
*HOUGH NW	36 52.5	101 45.0	266000.	0.555	-0.307	399000.	-0.403	0.278	1.640	22.755	18.252	18.282
*-----	37 0.0	101 45.0	267000.	1.334	0.472	413000.	-0.182	0.498	1.640	22.756	18.223	18.252
*-----	36 22.5	101 52.5	253000.	1.062	0.171	344000.	-0.373	0.336	1.640	22.753	18.371	18.401
*TEXHOMA NORTH	36 30.0	101 52.5	253000.	0.171	-0.719	358000.	-0.144	0.564	1.640	22.754	18.342	18.371
*TEXHOMA NE	36 37.5	101 52.5	254000.	0.922	0.032	372000.	0.084	0.790	1.640	22.754	18.312	18.342
*EVA SE	36 45.0	101 52.5	254000.	0.032	-0.859	386000.	0.310	1.015	1.640	22.755	18.282	18.312
*EVA NE	36 52.5	101 52.5	255000.	0.783	-0.108	400000.	0.534	1.238	1.640	22.755	18.252	18.282
*-----	37 0.0	101 52.5	256000.	1.533	0.643	414000.	0.757	1.459	1.640	22.756	18.223	18.252
*-----	36 22.5	102 0.0	242000.	1.404	0.485	345000.	0.537	1.269	1.640	22.753	18.371	18.401
*TEXHOMA SW	36 30.0	102 0.0	242000.	0.485	-0.434	359000.	0.767	1.498	1.640	22.754	18.342	18.371
*TEXHOMA NW	36 37.5	102 0.0	243000.	1.207	0.288	372000.	-0.645	0.084	1.640	22.754	18.312	18.342
*EVA	36 45.0	102 0.0	243000.	0.288	-0.631	386000.	-0.418	0.310	1.640	22.755	18.282	18.312
*ELKHART SOUTH	36 52.5	102 0.0	244000.	1.010	0.091	400000.	-0.193	0.534	1.640	22.755	18.252	18.282
*-----	37 0.0	102 0.0	244000.	0.091	-0.829	414000.	0.031	0.757	1.640	22.756	18.223	18.252
*-----	36 22.5	102 7.5	230000.	0.104	-0.844	345000.	-0.218	0.537	1.640	22.753	18.371	18.401
*GRIGGS	36 30.0	102 7.5	231000.	0.797	-0.151	359000.	0.014	0.767	1.640	22.754	18.342	18.371
*GRIGGS NE	36 37.5	102 7.5	232000.	1.491	0.543	373000.	0.244	0.996	1.640	22.754	18.312	18.342
*HOPKINS	36 45.0	102 7.5	232000.	0.543	-0.605	387000.	0.472	1.223	1.640	22.755	18.282	18.312
*STURGIS	36 52.5	102 7.5	233000.	1.236	0.288	401000.	0.699	1.449	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)					
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
-----	37 0.0	102 7.5	233000.	0.288	-0.660	414000.	-0.718	0.031	1.640	22.756	18.223	18.252
-----	36 22.5	102 15.0	219000.	0.444	-0.533	346000.	0.646	1.424	1.640	22.753	18.371	18.401
GRIGGS SW	36 30.0	102 15.0	220000.	1.109	0.132	359000.	-0.763	0.014	1.640	22.754	18.342	18.371
GRIGGS NW	36 37.5	102 15.0	220000.	0.132	-0.845	373000.	-0.532	0.244	1.640	22.754	18.312	18.342
KEYES EAST	36 45.0	102 15.0	221000.	0.797	-0.180	387000.	-0.303	0.472	1.640	22.755	18.282	18.312
STURGIS NW	36 52.5	102 15.0	222000.	1.462	0.485	401000.	-0.075	0.699	1.640	22.755	18.252	18.282
-----	37 0.0	102 15.0	222000.	0.485	-0.492	415000.	0.151	0.923	1.640	22.756	18.223	18.252
-----	36 22.5	102 22.5	208000.	0.783	-0.222	346000.	-0.156	0.646	1.640	22.753	18.371	18.401
CONRAD	36 30.0	102 22.5	209000.	1.420	0.414	360000.	0.078	0.878	1.640	22.754	18.342	18.371
SAMPSEL LAKE	36 37.5	102 22.5	209000.	0.414	-0.591	374000.	0.311	1.110	1.640	22.754	18.312	18.342
KEYES WEST	36 45.0	102 22.5	210000.	1.050	0.045	388000.	0.542	1.339	1.640	22.755	18.282	18.312
KEYES NE	36 52.5	102 22.5	210000.	0.045	-0.961	402000.	0.771	1.567	1.640	22.755	18.252	18.282
-----	37 0.0	102 22.5	211000.	0.681	-0.325	415000.	-0.644	0.151	1.640	22.756	18.223	18.252
-----	36 22.5	102 30.0	197000.	1.122	0.087	347000.	0.662	1.486	1.640	22.753	18.371	18.401
CONRAD SW	36 30.0	102 30.0	197000.	0.087	-0.947	360000.	-0.745	0.078	1.640	22.754	18.342	18.371
CONRAD NW	36 37.5	102 30.0	198000.	0.695	-0.339	374000.	-0.511	0.311	1.640	22.754	18.312	18.342
KEYES SW	36 45.0	102 30.0	199000.	1.303	0.268	388000.	-0.279	0.542	1.640	22.755	18.282	18.312
KEYES NW	36 52.5	102 30.0	199000.	0.268	-0.766	402000.	-0.049	0.771	1.640	22.755	18.252	18.282
-----	37 0.0	102 30.0	200000.	0.876	-0.159	416000.	0.180	0.998	1.640	22.756	18.223	18.252
-----	36 22.5	102 37.5	186000.	1.459	0.396	347000.	-0.187	0.662	1.640	22.753	18.371	18.401
BOISE CITY SE	36 30.0	102 37.5	186000.	0.396	-0.667	361000.	0.050	0.897	1.640	22.754	18.342	18.371
BOISE CITY	36 37.5	102 37.5	187000.	0.975	-0.088	375000.	0.285	1.130	1.640	22.754	18.312	18.342
FLAGG SPRINGS	36 45.0	102 37.5	188000.	1.554	0.491	389000.	0.519	1.363	1.640	22.755	18.282	18.312
RAZOR BLADE MES	36 52.5	102 37.5	188000.	0.491	-0.573	403000.	0.750	1.593	1.640	22.755	18.252	18.282
-----	37 0.0	102 37.5	189000.	1.069	0.006	416000.	-0.661	0.180	1.640	22.756	18.223	18.252
-----	36 22.5	102 45.0	174000.	0.153	-0.939	348000.	0.584	1.456	1.640	22.753	18.371	18.401
BOISE CITY SW	36 30.0	102 45.0	175000.	0.703	-0.388	361000.	-0.820	0.050	1.640	22.754	18.342	18.371
BOISE CITY NW	36 37.5	102 45.0	176000.	1.254	0.162	375000.	-0.563	0.285	1.640	22.754	18.312	18.342
AUTOGRAPH CLIFF	36 45.0	102 45.0	176000.	0.162	-0.930	389000.	-0.348	0.519	1.640	22.755	18.282	18.312
AUTOGRAPH CLIFF	36 52.5	102 45.0	177000.	0.712	-0.380	403000.	-0.115	0.750	1.640	22.755	18.252	18.282
-----	37 0.0	102 45.0	178000.	1.262	0.170	417000.	0.116	0.980	1.640	22.756	18.223	18.252
-----	36 22.5	102 52.5	163000.	0.488	-0.632	348000.	-0.310	0.584	1.640	22.753	18.371	18.401
FELT	36 30.0	102 52.5	164000.	1.010	-0.111	362000.	-0.071	0.822	1.640	22.754	18.342	18.371
FELT NE	36 37.5	102 52.5	165000.	1.531	0.411	376000.	0.167	1.059	1.640	22.754	18.312	18.342
KENTON SE	36 45.0	102 52.5	165000.	0.411	-0.710	390000.	0.403	1.294	1.640	22.755	18.282	18.312
KENTON NE	36 52.5	102 52.5	166000.	0.932	-0.189	404000.	0.638	1.527	1.640	22.755	18.252	18.282
-----	37 0.0	102 52.5	167000.	1.453	0.333	417000.	-0.771	0.116	1.640	22.756	18.223	18.252
-----	36 22.5	103 0.0	152000.	0.822	-0.327	349000.	0.414	1.332	1.640	22.753	18.371	18.401
FELT SW	36 30.0	103 0.0	153000.	1.315	0.166	363000.	0.655	1.572	1.640	22.754	18.342	18.371
WHEELESS	36 37.5	103 0.0	153000.	0.166	-0.984	376000.	-0.748	0.167	1.640	22.754	18.312	18.342
KENTON SW	36 45.0	103 0.0	154000.	0.659	-0.491	390000.	-0.510	0.403	1.640	22.755	18.282	18.312
KENTON	36 52.5	103 0.0	155000.	1.151	0.002	404000.	-0.274	0.638	1.640	22.755	18.252	18.282

TABLE F-1. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
7.5 MINUTE QUAD MAPS(SCALE 1:24000)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)					
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
-----	37 0.0	103 0.0	155000.	0.002	-1.148	418000.	-0.040	0.871	1.640	22.756	18.223	18.252
-----	36 22.5	103 7.5	141000.	1.155	-0.023	349000.	-0.527	0.414	1.640	22.753	18.371	18.401
RARDIN HILL	36 30.0	103 7.5	142000.	1.619	0.441	363000.	-0.284	0.655	1.640	22.754	18.342	18.371
MOSES	36 37.5	103 7.5	142000.	0.441	-0.737	377000.	-0.044	0.895	1.640	22.754	18.312	18.342
GREENDAILEY CAN	36 45.0	103 7.5	143000.	0.905	-0.273	391000.	0.196	1.137	1.640	22.755	18.282	18.312
GOODSON SCHOOL	36 52.5	103 7.5	144000.	1.369	0.191	405000.	0.433	1.368	1.640	22.755	18.252	18.282
-----	37 0.0	103 7.5	144000.	0.191	-0.987	419000.	0.669	1.602	1.640	22.756	18.223	18.252

TABLE F-2. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
15.0 MINUTE QUAD MAPS(SCALE 1:62500)
[J] GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID				
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
*-----	33 30.0	94 30.0	925000.	-0.179	0.438	25000.	0.480	-0.056	0.630	17.466	14.592	14.634
*-----	33 45.0	94 30.0	924000.	-0.192	0.426	52000.	0.027	-0.508	0.630	17.467	14.549	14.592
*-----	34 0.0	94 30.0	923000.	-0.205	0.413	80000.	0.205	-0.327	0.630	17.468	14.506	14.549
*COVE	34 15.0	94 30.0	922000.	-0.218	0.400	108000.	0.385	-0.146	0.630	17.469	14.463	14.506
*POTTER	34 30.0	94 30.0	921000.	-0.230	0.387	136000.	0.565	0.036	0.630	17.469	14.420	14.463
*BATES	34 45.0	94 30.0	920000.	-0.243	0.374	163000.	0.116	-0.412	0.630	17.470	14.376	14.420
*GREENWOOD	35 0.0	94 30.0	919000.	-0.256	0.361	191000.	0.296	-0.230	0.630	17.471	14.333	14.376
*VAN BUREN	35 15.0	94 30.0	918000.	-0.269	0.348	219000.	0.477	-0.048	0.630	17.472	14.288	14.333
*-----	35 30.0	94 30.0	917000.	-0.282	0.336	246000.	0.026	-0.497	0.630	17.472	14.244	14.288
*-----	35 45.0	94 30.0	916000.	-0.295	0.323	274000.	0.205	-0.316	0.630	17.473	14.199	14.244
*-----	36 0.0	94 30.0	915000.	-0.308	0.310	302000.	0.383	-0.137	0.630	17.474	14.154	14.199
*-----	36 15.0	94 30.0	914000.	-0.320	0.297	330000.	0.559	0.041	0.630	17.474	14.109	14.154
*-----	36 30.0	94 30.0	913000.	-0.333	0.285	357000.	0.103	-0.414	0.630	17.475	14.064	14.109
*-----	36 45.0	94 30.0	912000.	-0.346	0.272	385000.	0.274	-0.240	0.630	17.476	14.018	14.064
*-----	37 0.0	94 30.0	911000.	-0.358	0.260	413000.	0.443	-0.070	0.630	17.477	13.972	14.018
*-----	33 30.0	94 45.0	902000.	-0.037	0.537	24000.	0.348	-0.151	0.630	17.466	14.592	14.634
*-----	33 45.0	94 45.0	901000.	-0.094	0.480	52000.	0.524	0.027	0.630	17.467	14.549	14.592
*BROKEN BOW	34 0.0	94 45.0	900000.	-0.150	0.423	79000.	0.071	-0.425	0.630	17.468	14.506	14.549
*SMITHVILLE	34 15.0	94 45.0	899000.	-0.207	0.366	107000.	0.249	-0.245	0.630	17.469	14.463	14.506
*PAGE	34 30.0	94 45.0	898000.	-0.264	0.309	135000.	0.428	-0.065	0.630	17.469	14.420	14.463
*HEAVENER	34 45.0	94 45.0	897000.	-0.321	0.252	163000.	0.607	0.116	0.630	17.470	14.376	14.420
*-----	35 0.0	94 45.0	896000.	-0.378	0.195	190000.	0.156	-0.334	0.630	17.471	14.333	14.376
*-----	35 15.0	94 45.0	895000.	-0.435	0.138	218000.	0.335	-0.153	0.630	17.472	14.288	14.333
*-----	35 30.0	94 45.0	894000.	-0.492	0.081	246000.	0.513	0.026	0.630	17.472	14.244	14.288
*-----	35 45.0	94 45.0	893000.	-0.549	0.024	273000.	0.060	-0.425	0.630	17.473	14.199	14.244
*-----	36 0.0	94 45.0	893000.	0.024	0.598	301000.	0.237	-0.247	0.630	17.474	14.154	14.199
*-----	36 15.0	94 45.0	892000.	-0.033	0.541	329000.	0.411	-0.071	0.630	17.474	14.109	14.154
*-----	36 30.0	94 45.0	891000.	-0.089	0.484	357000.	0.583	0.103	0.630	17.475	14.064	14.109
*-----	36 45.0	94 45.0	890000.	-0.146	0.427	384000.	0.123	-0.356	0.630	17.476	14.018	14.064
*-----	37 0.0	94 45.0	889000.	-0.203	0.371	412000.	0.291	-0.187	0.630	17.477	13.972	14.018
*-----	33 30.0	95 0.0	878000.	-0.523	0.006	23000.	0.180	-0.282	0.630	17.466	14.592	14.634
*-----	33 45.0	95 0.0	878000.	0.006	0.535	51000.	0.354	-0.106	0.630	17.467	14.549	14.592
*GOLDEN	34 0.0	95 0.0	877000.	-0.095	0.434	79000.	0.530	0.071	0.630	17.468	14.506	14.549
*BETHEL(S)	34 15.0	95 0.0	876000.	-0.196	0.333	106000.	0.076	-0.381	0.630	17.469	14.463	14.506
*-----	34 30.0	95 0.0	875000.	-0.297	0.232	134000.	0.254	-0.202	0.630	17.469	14.420	14.463
*-----	34 45.0	95 0.0	874000.	-0.398	0.131	162000.	0.432	-0.023	0.630	17.470	14.376	14.420
*-----	35 0.0	95 0.0	873000.	-0.499	0.030	190000.	0.610	0.156	0.630	17.471	14.333	14.376
*-----	35 15.0	95 0.0	873000.	0.030	0.559	217000.	0.157	-0.295	0.630	17.472	14.288	14.333
*-----	35 30.0	95 0.0	872000.	-0.071	0.458	245000.	0.334	-0.117	0.630	17.472	14.244	14.288
*-----	35 45.0	95 0.0	871000.	-0.172	0.357	273000.	0.510	0.060	0.630	17.473	14.199	14.244

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TABLE F-2. OKLAHOMA COORDINATE SYSTEM(OKIZONE)
GRID CONSTRUCTION TABLES
15.0 MINUTE QUAD MAPS(SCALE 1:62500)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID			
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
-----	36 0.0	95 0.0	870000.	-0.273	0.256	300000.	0.054	-0.394	0.630	17.474	14.154	14.199
-----	36 15.0	95 0.0	869000.	-0.374	0.155	328000.	0.227	-0.219	0.630	17.474	14.109	14.154
-----	36 30.0	95 0.0	868000.	-0.475	0.055	356000.	0.398	-0.047	0.630	17.475	14.064	14.109
-----	36 45.0	95 0.0	868000.	0.055	0.584	384000.	0.567	0.123	0.630	17.476	14.018	14.064
-----	37 0.0	95 0.0	867000.	-0.046	0.483	411000.	0.103	-0.339	0.630	17.477	13.972	14.018
-----	33 30.0	95 15.0	855000.	-0.378	0.107	23000.	0.605	0.180	0.630	17.466	14.592	14.634
-----	33 45.0	95 15.0	855000.	0.107	0.592	50000.	0.148	-0.276	0.630	17.467	14.549	14.592
-----	34 0.0	95 15.0	854000.	-0.038	0.447	78000.	0.322	-0.100	0.630	17.468	14.506	14.549
-----	34 15.0	95 15.0	853000.	-0.184	0.301	106000.	0.498	0.076	0.630	17.469	14.463	14.506
-----	34 30.0	95 15.0	852000.	-0.329	0.156	133000.	0.044	-0.376	0.630	17.469	14.420	14.463
RED OAK	34 45.0	95 15.0	851000.	-0.474	0.011	161000.	0.220	-0.199	0.630	17.470	14.376	14.420
-----	35 0.0	95 15.0	851000.	0.011	0.496	189000.	0.397	-0.021	0.630	17.471	14.333	14.376
-----	35 15.0	95 15.0	850000.	-0.134	0.351	217000.	0.573	0.157	0.630	17.472	14.288	14.333
WEBBERS FALLS	35 30.0	95 15.0	849000.	-0.279	0.206	244000.	0.118	-0.296	0.630	17.472	14.244	14.288
HULBERT	35 45.0	95 15.0	848000.	-0.424	0.061	272000.	0.293	-0.120	0.630	17.473	14.199	14.244
-----	36 0.0	95 15.0	848000.	0.061	0.546	300000.	0.466	0.054	0.630	17.474	14.154	14.199
-----	36 15.0	95 15.0	847000.	-0.084	0.401	327000.	0.008	-0.403	0.630	17.474	14.109	14.154
-----	36 30.0	95 15.0	846000.	-0.229	0.256	355000.	0.178	-0.232	0.630	17.475	14.064	14.109
-----	36 45.0	95 15.0	845000.	-0.374	0.111	383000.	0.345	-0.063	0.630	17.476	14.018	14.064
-----	37 0.0	95 15.0	845000.	0.111	0.597	411000.	0.510	0.103	0.630	17.477	13.972	14.018
-----	33 30.0	95 30.0	832000.	-0.233	0.208	22000.	0.363	-0.025	0.630	17.466	14.592	14.634
-----	33 45.0	95 30.0	831000.	-0.422	0.019	50000.	0.534	0.148	0.630	17.467	14.549	14.592
-----	34 0.0	95 30.0	831000.	0.019	0.460	77000.	0.078	-0.308	0.630	17.468	14.506	14.549
-----	34 15.0	95 30.0	830000.	-0.170	0.271	105000.	0.252	-0.133	0.630	17.469	14.463	14.506
-----	34 30.0	95 30.0	829000.	-0.359	0.082	133000.	0.427	0.044	0.630	17.469	14.420	14.463
-----	34 45.0	95 30.0	829000.	0.082	0.523	161000.	0.602	0.220	0.630	17.470	14.376	14.420
-----	35 0.0	95 30.0	828000.	-0.108	0.333	188000.	0.147	-0.234	0.630	17.471	14.333	14.376
-----	35 15.0	95 30.0	827000.	-0.297	0.144	216000.	0.323	-0.057	0.630	17.472	14.288	14.333
KEEFETON	35 30.0	95 30.0	827000.	0.144	0.585	244000.	0.497	0.118	0.630	17.472	14.244	14.288
WAGONER	35 45.0	95 30.0	826000.	-0.045	0.396	271000.	0.040	-0.337	0.630	17.473	14.199	14.244
-----	36 0.0	95 30.0	825000.	-0.234	0.207	299000.	0.213	-0.164	0.630	17.474	14.154	14.199
-----	36 15.0	95 30.0	824000.	-0.423	0.018	327000.	0.383	0.008	0.630	17.474	14.109	14.154
-----	36 30.0	95 30.0	824000.	0.018	0.459	355000.	0.552	0.178	0.630	17.475	14.064	14.109
-----	36 45.0	95 30.0	823000.	-0.171	0.270	382000.	0.088	-0.285	0.630	17.476	14.018	14.064
-----	37 0.0	95 30.0	822000.	-0.360	0.081	410000.	0.252	-0.120	0.630	17.477	13.972	14.018
-----	33 30.0	95 45.0	809000.	-0.086	0.311	21000.	0.084	-0.267	0.630	17.466	14.592	14.634
GRANT	33 45.0	95 45.0	808000.	-0.319	0.078	49000.	0.254	-0.096	0.630	17.467	14.549	14.592
-----	34 0.0	95 45.0	808000.	0.078	0.474	77000.	0.426	0.078	0.630	17.468	14.506	14.549
-----	34 15.0	95 45.0	807000.	-0.156	0.241	105000.	0.600	0.252	0.630	17.469	14.463	14.506
-----	34 30.0	95 45.0	806000.	-0.389	0.008	132000.	0.144	-0.203	0.630	17.469	14.420	14.463
-----	34 45.0	95 45.0	806000.	0.008	0.405	160000.	0.318	-0.028	0.630	17.470	14.376	14.420

TABLE F-2. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
15.0 MINUTE QUAD MAPS(SCALE 1:62500)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)	
			DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID			
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
------	35 0.0	95 45.0	805000.	-0.225	0.171	188000.	0.492	0.147	0.630	17.471	14.333	14.376
------	35 15.0	95 45.0	805000.	0.171	0.568	215000.	0.036	-0.308	0.630	17.472	14.288	14.333
------	35 30.	95 45.0	804000.	-0.062	0.335	243000.	0.209	-0.133	0.630	17.472	14.244	14.288
------	35 45.	95 45.0	803000.	-0.295	0.102	271000.	0.382	0.040	0.630	17.473	14.199	14.244
------	36 0.0	95 45.0	803000.	0.102	0.499	299000.	0.553	0.213	0.630	17.474	14.154	14.199
------	36 15.	95 45.0	802000.	-0.131	0.266	326000.	0.092	-0.247	0.630	17.474	14.109	14.154
------	36 30.0	95 45.0	801000.	-0.365	0.032	354000.	0.260	-0.078	0.630	17.475	14.064	14.109
------	36 45.	95 45.0	801000.	0.032	0.429	382000.	0.425	0.088	0.630	17.476	14.018	14.064
------	37 0.0	95 45.0	800000.	-0.201	0.197	410000.	0.588	0.252	0.630	17.477	13.972	14.018
------	33 30.0	96 0.0	786000.	0.061	0.414	21000.	0.396	0.084	0.630	17.466	14.592	14.634
DIRECT	33 45.0	96 0.0	785000.	-0.216	0.137	49000.	0.567	0.254	0.630	17.467	14.549	14.592
------	34 0.0	96 0.0	785000.	0.137	0.490	76000.	0.109	-0.204	0.630	17.468	14.506	14.549
------	34 15.0	96 0.0	784000.	-0.140	0.212	104000.	0.281	-0.030	0.630	17.469	14.463	14.506
------	34 30.0	96 0.0	784000.	0.212	0.565	132000.	0.454	0.144	0.630	17.469	14.420	14.463
------	34 45.0	96 0.0	783000.	-0.065	0.288	160000.	0.627	0.316	0.630	17.470	14.376	14.420
------	35 0.0	96 0.0	782000.	-0.343	0.010	187000.	0.170	-0.138	0.630	17.471	14.333	14.376
------	35 15.0	96 0.0	782000.	0.010	0.363	215000.	0.343	0.036	0.630	17.472	14.288	14.333
------	35 30.0	96 0.0	781000.	-0.267	0.086	243000.	0.516	0.209	0.630	17.472	14.244	14.288
------	35 45.0	96 0.0	781000.	0.086	0.438	270000.	0.057	-0.248	0.630	17.473	14.199	14.244
------	36 0.0	96 0.0	780000.	-0.192	0.161	298000.	0.228	-0.077	0.630	17.474	14.154	14.199
------	36 15.0	96 0.0	780000.	0.161	0.514	326000.	0.396	0.092	0.630	17.474	14.109	14.154
------	36 30.0	96 0.0	779000.	-0.116	0.237	354000.	0.563	0.260	0.630	17.475	14.064	14.109
------	36 45.0	96 0.0	779000.	0.237	0.590	381000.	0.097	-0.205	0.630	17.476	14.018	14.064
------	37 0.0	96 0.0	778000.	-0.040	0.313	409000.	0.259	-0.042	0.630	17.477	13.972	14.018
BONHAM	33 30.0	96 15.0	763000.	0.209	0.518	20000.	0.045	-0.232	0.630	17.466	14.592	14.634
WADE	33 45.0	96 15.0	762000.	-0.112	0.197	48000.	0.214	-0.063	0.630	17.467	14.549	14.592
------	34 0.0	96 15.0	762000.	0.197	0.505	76000.	0.384	0.109	0.630	17.468	14.506	14.549
------	34 15.0	96 15.0	761000.	-0.125	0.184	104000.	0.555	0.281	0.630	17.469	14.463	14.506
------	34 30.0	96 15.0	761000.	0.184	0.493	131000.	0.097	-0.176	0.630	17.469	14.420	14.463
------	34 45.0	96 15.0	760000.	-0.137	0.171	159000.	0.270	-0.003	0.630	17.470	14.376	14.420
------	35 0.0	96 15.0	760000.	0.171	0.480	187000.	0.442	0.170	0.630	17.471	14.333	14.376
------	35 15.0	96 15.0	759000.	-0.150	0.156	215000.	0.615	0.343	0.630	17.472	14.288	14.333
------	35 30.0	96 15.0	759000.	0.156	0.467	242000.	0.156	-0.114	0.630	17.472	14.244	14.288
KIEFER	35 45.0	96 15.0	758000.	-0.163	0.146	270000.	0.327	0.057	0.630	17.473	14.199	14.244
------	36 0.0	96 15.0	758000.	0.146	0.454	298000.	0.496	0.228	0.630	17.474	14.154	14.199
------	36 15.0	96 15.0	757000.	-0.176	0.133	325000.	0.034	-0.234	0.630	17.474	14.109	14.154
------	36 30.0	96 15.0	757000.	0.133	0.442	353000.	0.200	-0.067	0.630	17.475	14.064	14.109
------	36 45.0	96 15.0	756000.	-0.188	0.121	381000.	0.363	0.097	0.630	17.476	14.018	14.064
------	37 0.0	96 15.0	756000.	0.121	0.429	409000.	0.524	0.259	0.630	17.477	13.972	14.018
WHITEWRIGHT	33 30.0	96 30.0	740000.	0.358	0.623	20000.	0.285	0.045	0.630	17.466	14.592	14.634
DURANT	33 45.0	96 30.0	739000.	-0.007	0.257	48000.	0.453	0.214	0.630	17.467	14.549	14.592

TABLE F-2. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
15.0 MINUTE QUAD MAPS(SCALE 1:62500)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)					
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	[N]BOTTOM
*-----	34 0.0	96 30.0	739000.	0.257	0.522	76000.	0.623	0.384	0.630	17.468	14.506	14.549
*-----	34 15.0	96 30.0	738000.	-0.108	0.157	103000.	0.163	-0.075	0.630	17.469	14.463	14.506
*-----	34 30.0	96 30.0	738000.	0.157	0.421	131000.	0.335	0.097	0.630	17.469	14.420	14.463
*-----	34 45.0	96 30.0	737000.	-0.209	0.056	159000.	0.507	0.270	0.630	17.470	14.376	14.420
*-----	35 0.0	96 30.0	737000.	0.056	0.320	186000.	0.048	-0.188	0.630	17.471	14.333	14.376
*-----	35 15.0	96 30.0	737000.	0.320	0.585	214000.	0.220	-0.015	0.630	17.472	14.288	14.333
*BRISTOW	35 30.0	96 30.0	736000.	-0.045	0.219	242000.	0.391	0.156	0.630	17.472	14.244	14.288
*-----	35 45.0	96 30.0	736000.	0.219	0.484	270000.	0.561	0.327	0.630	17.473	14.199	14.244
*-----	36 0.0	96 30.0	735000.	-0.146	0.118	297000.	0.099	-0.134	0.630	17.474	14.154	14.199
*-----	36 15.0	96 30.0	735000.	0.118	0.383	325000.	0.266	0.034	0.630	17.474	14.109	14.154
*-----	36 30.0	96 30.0	734000.	-0.247	0.018	353000.	0.431	0.200	0.630	17.475	14.064	14.109
*-----	36 45.0	96 30.0	734000.	0.018	0.282	381000.	0.594	0.363	0.630	17.476	14.018	14.064
*-----	37 0.0	96 30.0	734000.	0.282	0.547	408000.	0.124	-0.106	0.630	17.477	13.972	14.018
*-----	33 30.0	96 45.0	716000.	-0.122	0.098	20000.	0.488	0.285	0.630	17.466	14.592	14.634
*DENISON DAM	33 45.0	96 45.0	716000.	0.098	0.319	47000.	0.026	-0.177	0.630	17.467	14.549	14.592
*-----	34 0.0	96 45.0	716000.	0.319	0.539	75000.	0.195	-0.007	0.630	17.468	14.506	14.549
*-----	34 15.0	96 45.0	715000.	-0.091	0.130	103000.	0.365	0.163	0.630	17.469	14.463	14.506
*-----	34 30.0	96 45.0	715000.	0.130	0.350	131000.	0.535	0.335	0.630	17.469	14.420	14.463
*-----	34 45.0	96 45.0	715000.	0.350	0.571	158000.	0.077	-0.124	0.630	17.470	14.376	14.420
*-----	35 0.0	96 45.0	714000.	-0.060	0.161	186000.	0.248	0.048	0.630	17.471	14.333	14.376
*STROUD	35 15.0	96 45.0	714000.	0.161	0.381	214000.	0.419	0.220	0.630	17.472	14.288	14.333
*DRUMRIGHT	35 30.0	96 45.0	714000.	0.381	0.602	242000.	0.589	0.391	0.630	17.472	14.244	14.288
*YALE	35 45.0	96 45.0	713000.	-0.028	0.192	269000.	0.128	-0.069	0.630	17.473	14.199	14.244
*SKEDEE	36 0.0	96 45.0	713000.	0.192	0.413	297000.	0.296	0.099	0.630	17.474	14.154	14.199
*FAIRFAX	36 15.0	96 45.0	712000.	-0.217	0.003	325000.	0.463	0.266	0.630	17.474	14.109	14.154
*FORAKER	36 30.0	96 45.0	712000.	0.003	0.224	353000.	0.627	0.431	0.630	17.475	14.064	14.109
*-----	36 45.0	96 45.0	712000.	0.224	0.444	380000.	0.159	-0.036	0.630	17.476	14.018	14.064
*-----	37 0.0	96 45.0	711000.	-0.186	0.035	408000.	0.319	0.124	0.630	17.477	13.972	14.018
*GORDONVILLE	33 30.0	97 0.0	693000.	0.028	0.204	19000.	0.024	-0.142	0.630	17.466	14.592	14.634
*-----	33 45.0	97 0.0	693000.	0.204	0.380	47000.	0.191	0.026	0.630	17.467	14.549	14.592
*-----	34 0.0	97 0.0	693000.	0.380	0.557	75000.	0.360	0.195	0.630	17.468	14.506	14.549
*-----	34 15.0	97 0.0	692000.	-0.073	0.103	103000.	0.529	0.365	0.630	17.469	14.463	14.506
*-----	34 30.0	97 0.0	692000.	0.103	0.279	130000.	0.070	-0.095	0.630	17.469	14.420	14.463
*-----	34 45.0	97 0.0	692000.	0.279	0.456	158000.	0.240	0.077	0.630	17.470	14.376	14.420
*-----	35 0.0	97 0.0	691000.	-0.174	0.002	186000.	0.411	0.248	0.630	17.471	14.333	14.376
*CHANDLER	35 15.0	97 0.0	691000.	0.002	0.179	214000.	0.581	0.419	0.630	17.472	14.288	14.333
*AGRA	35 30.0	97 0.0	691000.	0.179	0.355	241000.	0.121	-0.041	0.630	17.472	14.244	14.288
*RIPLEY	35 45.0	97 0.0	691000.	0.355	0.531	269000.	0.290	0.128	0.630	17.473	14.199	14.244
*PAWNEE	36 0.0	97 0.0	690000.	-0.099	0.078	297000.	0.458	0.296	0.630	17.474	14.154	14.199
*BELFORD	36 15.0	97 0.0	690000.	0.078	0.254	325000.	0.623	0.463	0.630	17.474	14.109	14.154
*-----	36 30.0	97 0.0	690000.	0.254	0.430	352000.	0.157	-0.003	0.630	17.475	14.064	14.109
	36 45.0	97 0.0	690000.	0.430	0.607	380000.	0.319	0.159	0.630	17.476	14.018	14.064

TABLE F-2. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
15.0 MINUTE QUAD MAPS(SCALE 1:62500)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)					
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (D S MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	[K]MAP GRID INTERVAL (INCHES)	[L] VERTICAL	HORIZONTAL [M]TOP	HORIZONTAL [N]BOTTOM
------	37 0.0	97 0.0	689000.	-0.023	0.153	408000.	0.478	0.319	0.630	17.477	13.972	14.018
------	33 30.0	97 15.0	670000.	0.178	0.310	19000.	0.154	0.024	0.630	17.466	14.592	14.634
------	33 45.0	97 15.0	670000.	0.310	0.442	47000.	0.320	0.191	0.630	17.467	14.549	14.592
------	34 0.0	97 15.0	670000.	0.442	0.575	75000.	0.488	0.360	0.630	17.468	14.506	14.549
------	34 15.0	97 15.0	669000.	-0.055	0.077	102000.	0.028	-0.100	0.630	17.469	14.463	14.506
------	34 30.0	97 15.0	669000.	0.077	0.209	130000.	0.197	0.070	0.630	17.469	14.420	14.463
------	34 45.0	97 15.0	669000.	0.209	0.342	158000.	0.368	0.240	0.630	17.470	14.376	14.420
------	35 0.0	97 15.0	669000.	0.342	0.474	186000.	0.538	0.411	0.630	17.471	14.333	14.376
------	35 15.0	97 15.0	669000.	0.474	0.606	213000.	0.078	-0.049	0.630	17.472	14.288	14.333
------	35 30.0	97 15.0	668000.	-0.024	0.108	241000.	0.247	0.121	0.630	17.472	14.244	14.288
PERKINS	35 45.0	97 15.0	668000.	0.108	0.241	269000.	0.416	0.290	0.630	17.473	14.199	14.244
------	36 0.0	97 15.0	668000.	0.241	0.373	297000.	0.583	0.458	0.630	17.474	14.154	14.199
------	36 15.0	97 15.0	668000.	0.373	0.505	324000.	0.118	-0.007	0.630	17.474	14.109	14.154
------	36 30.0	97 15.0	667000.	-0.125	0.008	352000.	0.282	0.157	0.630	17.475	14.064	14.109
------	36 45.0	97 15.0	667000.	0.008	0.140	380000.	0.443	0.319	0.630	17.476	14.018	14.064
------	37 0.0	97 15.0	667000.	0.140	0.272	408000.	0.602	0.478	0.630	17.477	13.972	14.018
------	33 30.0	97 30.0	647000.	0.328	0.417	19000.	0.246	0.154	0.630	17.466	14.592	14.634
------	33 45.0	97 30.0	647000.	0.417	0.505	47000.	0.412	0.320	0.630	17.467	14.549	14.592
------	34 0.0	97 30.0	647000.	0.505	0.593	75000.	0.580	0.488	0.630	17.468	14.506	14.549
------	34 15.0	97 30.0	646000.	-0.037	0.051	102000.	0.119	0.028	0.630	17.469	14.463	14.506
------	34 30.0	97 30.0	646000.	0.051	0.139	130000.	0.289	0.197	0.630	17.469	14.420	14.463
------	34 45.0	97 30.0	646000.	0.139	0.228	158000.	0.459	0.368	0.630	17.470	14.376	14.420
NORMAN	35 0.0	97 30.0	646000.	0.228	0.316	186000.	0.629	0.538	0.630	17.471	14.333	14.376
------	35 15.0	97 30.0	646000.	0.316	0.404	213000.	0.168	0.078	0.630	17.472	14.288	14.333
------	35 30.0	97 30.0	646000.	0.404	0.492	241000.	0.338	0.247	0.630	17.472	14.244	14.288
------	35 45.0	97 30.0	646000.	0.492	0.580	269000.	0.506	0.416	0.630	17.473	14.199	14.244
------	36 0.0	97 30.0	645000.	-0.050	0.038	296000.	0.043	-0.047	0.630	17.474	14.154	14.199
------	36 15.0	97 30.0	645000.	0.038	0.127	324000.	0.208	0.118	0.630	17.474	14.109	14.154
------	36 30.0	97 30.0	645000.	0.127	0.215	352000.	0.371	0.282	0.630	17.475	14.064	14.109
------	36 45.0	97 30.0	645000.	0.215	0.303	380000.	0.532	0.443	0.630	17.476	14.018	14.064
------	37 0.0	97 30.0	645000.	0.303	0.391	407000.	0.060	-0.028	0.630	17.477	13.972	14.018
------	33 30.0	97 45.0	624000.	0.479	0.523	19000.	0.301	0.246	0.630	17.466	14.592	14.634
------	33 45.0	97 45.0	624000.	0.523	0.567	47000.	0.468	0.412	0.630	17.467	14.549	14.592
------	34 0.0	97 45.0	624000.	0.567	0.611	74000.	0.005	-0.050	0.630	17.468	14.506	14.549
------	34 15.0	97 45.0	623000.	-0.019	0.026	102000.	0.174	0.119	0.630	17.469	14.463	14.506
------	34 30.0	97 45.0	623000.	0.026	0.070	130000.	0.343	0.289	0.630	17.469	14.420	14.463
------	34 45.0	97 45.0	623000.	0.070	0.114	158000.	0.513	0.459	0.630	17.470	14.376	14.420
------	35 0.0	97 45.0	623000.	0.114	0.158	185000.	0.053	-0.001	0.630	17.471	14.333	14.376
OKLAHOMA CITY	35 15.0	97 45.0	623000.	0.158	0.202	213000.	0.223	0.168	0.630	17.472	14.288	14.333
------	35 30.0	97 45.0	623000.	0.202	0.246	241000.	0.392	0.338	0.630	17.472	14.244	14.288
------	35 45.0	97 45.0	623000.	0.246	0.290	269000.	0.560	0.506	0.630	17.473	14.199	14.244

TABLE F-2. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
15.0 MINUTE QUAD MAPS(SCALE 1:62500)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL	
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
------	36 0.0	97 45.0	623000.	0.290	0.334	296000.	0.096	0.043	0.630	17.474	14.154	14.199
GARBER	36 15.0	97 45.0	623000.	0.334	0.378	324000.	0.261	0.208	0.630	17.474	14.109	14.154
------	36 30.0	97 45.0	623000.	0.378	0.422	352000.	0.424	0.371	0.630	17.475	14.064	14.109
------	36 45.0	97 45.0	623000.	0.422	0.466	380000.	0.585	0.532	0.630	17.476	14.018	14.064
------	37 0.0	97 45.0	623000.	0.466	0.510	407000.	0.113	0.060	0.630	17.477	13.972	14.018
------	33 30.0	98 0.0	601000.	0.630	0.630	19000.	0.320	0.301	0.630	17.466	14.592	14.634
------	33 45.0	98 0.0	601000.	0.630	0.630	47000.	0.486	0.468	0.630	17.467	14.549	14.592
RYAN	34 0.0	98 0.0	601000.	0.630	0.630	74000.	0.024	0.005	0.630	17.468	14.506	14.549
------	34 15.0	98 0.0	601000.	0.630	0.630	102000.	0.192	0.174	0.630	17.469	14.463	14.506
MARLOW	34 30.0	98 0.0	601000.	0.630	0.630	130000.	0.362	0.343	0.630	17.469	14.420	14.463
RUSH SPRINGS	34 45.0	98 0.0	601000.	0.630	0.630	158000.	0.531	0.513	0.630	17.470	14.376	14.420
------	35 0.0	98 0.0	601000.	0.630	0.630	185000.	0.071	0.053	0.630	17.471	14.333	14.376
------	35 15.0	98 0.0	601000.	0.630	0.630	213000.	0.241	0.223	0.630	17.472	14.288	14.333
------	35 30.0	98 0.0	601000.	0.630	0.630	241000.	0.410	0.392	0.630	17.472	14.244	14.288
------	35 45.0	98 0.0	601000.	0.630	0.630	269000.	0.578	0.560	0.630	17.473	14.199	14.244
HENNESSEY	36 0.0	98 0.0	601000.	0.630	0.630	296000.	0.114	0.096	0.630	17.474	14.154	14.199
ENID	36 15.0	98 0.0	601000.	0.630	0.630	324000.	0.279	0.261	0.630	17.474	14.109	14.154
------	36 30.0	98 0.0	601000.	0.630	0.630	352000.	0.442	0.424	0.630	17.475	14.064	14.109
------	36 45.0	98 0.0	601000.	0.630	0.630	380000.	0.603	0.585	0.630	17.476	14.018	14.064
------	37 0.0	98 0.0	601000.	0.630	0.630	407000.	0.131	0.113	0.630	17.477	13.972	14.018
------	33 30.0	98 15.0	577000.	0.151	0.107	19000.	0.301	0.320	0.630	17.466	14.592	14.634
HENRIETTA	33 45.0	98 15.0	577000.	0.107	0.063	47000.	0.468	0.486	0.630	17.467	14.549	14.592
HASTINGS	34 0.0	98 15.0	577000.	0.063	0.019	74000.	0.005	0.024	0.630	17.468	14.506	14.549
TEMPLE	34 15.0	98 15.0	577000.	0.019	-0.026	102000.	0.174	0.192	0.630	17.469	14.463	14.506
NELLIE	34 30.0	98 15.0	578000.	0.604	0.560	130000.	0.343	0.362	0.630	17.469	14.420	14.463
CEMENT	34 45.0	98 15.0	578000.	0.560	0.516	158000.	0.513	0.531	0.630	17.470	14.376	14.420
------	35 0.0	98 15.0	578000.	0.516	0.472	185000.	0.053	0.071	0.630	17.471	14.333	14.376
------	35 15.0	98 15.0	578000.	0.472	0.428	213000.	0.223	0.241	0.630	17.472	14.288	14.333
FORT RENO	35 30.0	98 15.0	578000.	0.428	0.384	241000.	0.392	0.410	0.630	17.472	14.244	14.288
------	35 45.0	98 15.0	578000.	0.384	0.340	269000.	0.560	0.578	0.630	17.473	14.199	14.244
AMES	36 0.0	98 15.0	578000.	0.340	0.296	296000.	0.096	0.114	0.630	17.474	14.154	14.199
RINGWOOD	36 15.0	98 15.0	578000.	0.296	0.252	324000.	0.261	0.279	0.630	17.474	14.109	14.154
------	36 30.0	98 15.0	578000.	0.252	0.208	352000.	0.424	0.442	0.630	17.475	14.064	14.109
------	36 45.0	98 15.0	578000.	0.208	0.163	380000.	0.585	0.603	0.630	17.476	14.018	14.064
------	37 0.0	98 15.0	578000.	0.163	0.119	407000.	0.113	0.131	0.630	17.477	13.972	14.018
------	33 30.0	98 30.0	554000.	0.301	0.213	19000.	0.246	0.301	0.630	17.466	14.592	14.634
------	33 45.0	98 30.0	554000.	0.213	0.125	47000.	0.412	0.468	0.630	17.467	14.549	14.592
RANDLETT	34 0.0	98 30.0	554000.	0.125	0.037	74000.	-0.050	0.005	0.630	17.468	14.506	14.549
WALTERS	34 15.0	98 30.0	554000.	0.037	-0.051	102000.	0.119	0.174	0.630	17.469	14.463	14.506
LAWTON	34 30.0	98 30.0	555000.	0.579	0.491	130000.	0.289	0.343	0.630	17.469	14.420	14.463
APACHE	34 45.0	98 30.0	555000.	0.491	0.402	158000.	0.459	0.513	0.630	17.470	14.376	14.420

TABLE F-2. OKLAHOMA COORDINATE SYSTEM(OKIZONE)
GRID CONSTRUCTION TABLES
15.0 MINUTE QUAD MAPS(SCALE 1:62500)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL	
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
FORT COBB	35 0.0	98 30.0	555000.	0.402	0.314	185000.	-0.001	0.053	0.630	17.471	14.333	14.376
BINGER	35 15.0	98 30.0	555000.	0.314	0.226	213000.	0.168	0.223	0.630	17.472	14.288	14.333
GEARY	35 30.0	98 30.0	555000.	0.226	0.138	241000.	0.338	0.392	0.630	17.472	14.244	14.288
-----	35 45.0	98 30.0	55000.	0.138	0.050	269000.	0.506	0.560	0.630	17.473	14.199	14.244
-----	36 0.0	98 30.0	555000.	0.050	-0.038	296000.	0.043	0.096	0.630	17.474	14.154	14.199
-----	36 15.0	98 30.0	556000.	0.591	0.503	324000.	0.208	0.261	0.630	17.474	14.109	14.154
-----	36 30.0	98 30.0	5 0000.	0.503	0.415	352000.	0.371	0.424	0.630	17.475	14.064	14.109
-----	36 45.0	98 30.0	556000.	0.415	0.327	380000.	0.532	0.585	0.630	17.476	14.018	14.064
-----	37 0.0	98 30.0	556000.	0.327	0.238	407000.	0.060	0.113	0.630	17.477	13.972	14.018
-----	33 30.0	98 45.0	531000.	0.452	0.320	19000.	0.154	0.246	0.630	17.466	14.592	14.634
-----	33 45.0	98 45.0	531000.	0.320	0.187	47000.	0.320	0.412	0.630	17.467	14.549	14.592
BURKBURNETT	34 0.0	98 45.0	531000.	0.187	0.055	75000.	0.488	0.580	0.630	17.468	14.506	14.549
CHATTANOOGA	34 15.0	98 45.0	531000.	0.055	-0.077	102000.	0.028	0.119	0.630	17.469	14.463	14.506
CACHE	34 30.0	98 45.0	532000.	0.553	0.421	130000.	0.197	0.289	0.630	17.469	14.420	14.463
SADDLE MTN	34 45.0	98 45.0	5 2000.	0.421	0.288	158000.	0.368	0.459	0.630	17.470	14.376	14.420
CARNEGIE	35 0.0	98 45.0	532000.	0.288	0.156	186000.	0.538	0.629	0.630	17.471	14.333	14.376
EARLY	35 15.0	98 45.0	532000.	0.156	0.024	213000.	0.078	0.168	0.630	17.472	14.288	14.333
WEATHERFORD	35 30.0	98 45.0	532000.	0.024	-0.108	241000.	0.247	0.338	0.630	17.472	14.244	14.288
OAKWOOD	35 45.0	98 45.0	533000.	0.522	0.389	269000.	0.416	0.506	0.630	17.473	14.199	14.244
-----	36 0.0	98 45.0	533000.	0.389	0.257	296000.	-0.047	0.043	0.630	17.474	14.154	14.199
-----	36 15.0	98 45.0	533000.	0.257	0.125	324000.	0.118	0.208	0.630	17.474	14.109	14.154
-----	36 30.0	98 45.0	533000.	0.125	-0.008	352000.	0.282	0.371	0.630	17.475	14.064	14.109
-----	36 45.0	98 45.0	534000.	0.622	0.490	380000.	0.443	0.532	0.630	17.476	14.018	14.064
-----	37 0.0	98 45.0	534000.	0.490	0.357	407000.	-0.028	0.060	0.630	17.477	13.972	14.018
-----	33 30.0	99 0.0	508000.	0.602	0.426	19000.	0.024	0.154	0.630	17.466	14.592	14.634
-----	33 45.0	99 0.0	50 00.	0.426	0.250	47000.	0.191	0.320	0.630	17.467	14.549	14.592
ELECTRA	34 0.0	99 0.0	508000.	0.250	0.073	75000.	0.360	0.488	0.630	17.468	14.506	14.549
-----	34 15.0	99 0.0	508000.	0.073	-0.103	102000.	-0.100	0.028	0.630	17.469	14.463	14.506
SNIDER	34 30.0	99 0.0	509000.	0.527	0.351	130000.	0.070	0.197	0.630	17.469	14.420	14.463
COOPERTON	34 45.0	99 0.0	509000.	0.351	0.174	158000.	0.240	0.368	0.630	17.470	14.376	14.420
GOTEBO	35 0.0	99 0.0	509000.	0.174	-0.002	186000.	0.411	0.538	0.630	17.471	14.333	14.376
CORDELL	35 15.0	99 0.0	510000.	0.628	0.451	213000.	-0.049	0.078	0.630	17.472	14.288	14.333
CLINTON	35 30.0	99 0.0	510000.	0.451	0.275	241000.	0.121	0.247	0.630	17.472	14.244	14.288
PUTNAM	35 45.0	99 0.0	510000.	0.275	0.099	269000.	0.290	0.416	0.630	17.473	14.199	14.244
-----	36 0.0	99 0.0	510000.	0.099	-0.078	297000.	0.458	0.583	0.630	17.474	14.154	14.199
-----	36 15.0	99 0.0	511000.	0.552	0.376	324000.	-0.007	0.118	0.630	17.474	14.109	14.154
-----	36 30.0	99 0.0	511000.	0.376	0.199	352000.	0.157	0.282	0.630	17.475	14.064	14.109
-----	36 45.0	99 0.0	511000.	0.199	0.023	380000.	0.319	0.443	0.630	17.476	14.018	14.064
-----	37 0.0	99 0.0	511000.	0.023	-0.153	408000.	0.478	0.602	0.630	17.477	13.972	14.018
-----	33 30.0	99 15.0	484000.	0.122	-0.098	19000.	-0.162	0.024	0.630	17.466	14.592	14.634
-----	33 45.0	99 15.0	485000.	0.532	0.311	47000.	0.026	0.191	0.630	17.467	14.549	14.592

TABLE F-2. OKLAHOMA COORDINATE SYSTEM(UNIZONE)
GRID CONSTRUCTION TABLES
15.0 MINUTE QUAD MAPS(SCALE 1:62500)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
				DISPLACEMENT (INCHES)			DISPLACEMENT (INCHES)		[K]MAP GRID		HORIZONTAL	
[A]NAME	[B] LATITUDE (DEGS MINS)	[C] LONGITUDE (DEGS MINS)	[D] VALUE (METERS)	[E]SW	[F]NW	[G] VALUE (METERS)	[H]SW	[I]SE	INTERVAL (INCHES)	[L] VERTICAL	[M]TOP	[N]BOTTOM
DAVIDSON	34 0.0	99 15.0	485000.	0.311	0.091	75000.	0.195	0.360	0.630	17.468	14.506	14.549
FREDERICK	34 15.0	99 15.0	485000.	0.091	-0.130	103000.	0.365	0.529	0.630	17.469	14.463	14.506
------	34 30.0	99 15.0	486000.	0.500	0.280	130000.	-0.095	0.070	0.630	17.469	14.420	14.463
------	34 45.0	99 15.0	486000.	0.280	0.060	158000.	0.077	0.240	0.630	17.470	14.376	14.420
HOBART	35 0.0	99 15.0	486000.	0.060	-0.161	186000.	0.248	0.411	0.630	17.471	14.333	14.376
DILL CITY	35 15.0	99 15.0	487000.	0.469	0.249	214000.	0.419	0.581	0.630	17.472	14.288	14.333
BUTLER	35 30.0	99 15.0	487000.	0.249	0.028	241000.	-0.041	0.121	0.630	17.472	14.244	14.288
ALEDO	35 45.0	99 15.0	487000.	0.028	-0.192	269000.	0.128	0.290	0.630	17.473	14.199	14.244
------	36 0.0	99 15.0	488000.	0.438	0.217	297000.	0.296	0.458	0.630	17.474	14.154	14.199
------	36 15.0	99 15.0	488000.	0.217	-0.003	325000.	0.463	0.623	0.630	17.474	14.109	14.154
------	36 30.0	99 15.0	489000.	0.627	0.406	352000.	-0.003	0.157	0.630	17.475	14.064	14.109
------	36 45.0	99 15.0	489000.	0.406	0.186	380000.	0.159	0.319	0.630	17.476	14.018	14.064
------	37 0.0	99 15.0	489000.	0.186	-0.035	408000.	0.319	0.478	0.630	17.477	13.972	14.018
------	33 30.0	99 30.0	461000.	0.272	0.007	20000.	0.285	0.488	0.630	17.466	14.592	14.634
------	33 45.0	99 30.0	461000.	0.007	-0.257	47000.	-0.177	0.026	0.630	17.467	14.549	14.592
------	34 0.0	99 30.0	462000.	0.372	0.108	75000.	-0.007	0.195	0.630	17.468	14.506	14.549
ELMER	34 15.0	99 30.0	462000.	0.108	-0.157	103000.	0.163	0.365	0.630	17.469	14.463	14.506
------	34 30.0	99 30.0	463000.	0.473	0.209	131000.	0.335	0.535	0.630	17.469	14.420	14.463
------	34 45.0	99 30.0	463000.	0.209	-0.056	158000.	-0.124	0.077	0.630	17.470	14.376	14.420
RETROP	35 0.0	99 30.0	464000.	0.574	0.310	186000.	0.048	0.248	0.630	17.471	14.333	14.376
ELK CITY	35 15.0	99 30.0	464000.	0.310	0.045	214000.	0.220	0.419	0.630	17.472	14.288	14.333
HAMMON	35 30.0	99 30.0	464000.	0.045	-0.219	242000.	0.391	0.589	0.630	17.472	14.244	14.288
LEEDEY	35 45.0	99 30.0	465000.	0.411	0.146	269000.	-0.069	0.128	0.630	17.473	14.199	14.244
------	36 0.0	99 30.0	465000.	0.146	-0.118	297000.	0.099	0.296	0.630	17.474	14.154	14.199
------	36 15.0	99 30.0	466000.	0.512	0.247	325000.	0.266	0.463	0.630	17.474	14.109	14.154
------	36 30.0	99 30.0	466000.	0.247	-0.018	353000.	0.431	0.627	0.630	17.475	14.064	14.109
------	36 45.0	99 30.0	467000.	0.612	0.348	380000.	-0.036	0.159	0.630	17.476	14.018	14.064
------	37 0.0	99 30.0	467000.	0.348	0.083	408000.	0.124	0.319	0.630	17.477	13.972	14.018
------	33 30.0	99 45.0	438000.	0.420	0.112	20000.	0.045	0.285	0.630	17.466	14.592	14.634
------	33 45.0	99 45.0	438000.	0.112	-0.197	48000.	0.214	0.453	0.630	17.467	14.549	14.592
------	34 0.0	99 45.0	439000.	0.433	0.125	76000.	0.384	0.623	0.630	17.468	14.506	14.549
QUANAH	34 15.0	99 45.0	439000.	0.125	-0.184	103000.	-0.075	0.163	0.630	17.469	14.463	14.506
------	34 30.0	99 45.0	440000.	0.446	0.137	131000.	0.097	0.335	0.630	17.469	14.420	14.463
------	34 45.0	99 45.0	440000.	0.137	-0.171	159000.	0.270	0.507	0.630	17.470	14.376	14.420
WILLOW	35 0.0	99 45.0	441000.	0.459	0.150	186000.	-0.188	0.048	0.630	17.471	14.333	14.376
SAYRE	35 15.0	99 45.0	441000.	0.150	-0.158	214000.	-0.015	0.220	0.630	17.472	14.288	14.333
CHEYENNE	35 30.0	99 45.0	442000.	0.472	0.163	242000.	0.156	0.391	0.630	17.472	14.244	14.288
------	35 45.0	99 45.0	442000.	0.163	-0.146	270000.	0.327	0.561	0.630	17.473	14.199	14.244
------	36 0.0	99 45.0	443000.	0.484	0.176	297000.	-0.134	0.099	0.630	17.474	14.154	14.199
------	36 15.0	99 45.0	443000.	0.176	-0.133	325000.	0.034	0.266	0.630	17.474	14.109	14.154
------	36 30.0	99 45.0	444000.	0.497	0.188	353000.	0.200	0.431	0.630	17.475	14.064	14.109
------	36 45.0	99 45.0	444000.	0.188	-0.121	381000.	0.363	0.594	0.630	17.476	14.018	14.064

TABLE F-2. OKLAHOMA COORDINATE SYSTEM(OKIZONE)
GRID CONSTRUCTION TABLES
15.0 MINUTE QUAD MAPS(SCALE 1:62500)
[J] GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION				1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
	[B] LATITUDE	[C] LONGITUDE	[D] VALUE	DISPLACEMENT (INCHES)		[G] VALUE	DISPLACEMENT (INCHES)		[K]MAP GRID INTERVAL	[L]	HORIZONTAL		
[A]NAME	(DEGS MINS)	(DEGS MINS)	(METERS)	[E]SW	[F]NW	(METERS)	[H]SW	[I]SE	(INCHES)	VERTICAL	[M]TOP	[N]BOTTOM	
*-----	37 0.0	99 45.0	445000.	0.509	0.200	408000.	-0.106	0.124	0.630	17.477	13.972	14.018	
*-----	33 30.0	100 0.0	415000.	0.569	0.216	20000.	-0.232	0.045	0.630	17.466	14.592	14.634	
*-----	33 45.0	100 0.0	415000.	0.216	-0.137	48000.	-0.063	0.214	0.630	17.467	14.549	14.592	
*-----	34 0.0	100 0.0	416000.	0.493	0.140	76000.	0.109	0.384	0.630	17.468	14.506	14.549	
*GOODLETT	34 15.0	100 0.0	416000.	0.140	-0.212	104000.	0.281	0.555	0.630	17.469	14.463	14.506	
*HOLLIS	34 30.0	100 0.0	417000.	0.418	0.065	131000.	-0.176	0.097	0.630	17.469	14.420	14.463	
*-----	34 45.0	100 0.0	417000.	0.065	-0.288	159000.	-0.003	0.270	0.630	17.470	14.376	14.420	
*ERICK	35 0.0	100 0.0	418000.	0.343	-0.010	187000.	0.170	0.442	0.630	17.471	14.333	14.376	
*SWEETWATER	35 15.0	100 0.0	419000.	0.620	0.267	215000.	0.343	0.615	0.630	17.472	14.288	14.333	
*REYDON	35 30.0	100 0.0	419000.	0.267	-0.086	242000.	-0.114	0.156	0.630	17.472	14.244	14.288	
*-----	35 45.0	100 0.0	420000.	0.544	0.192	270000.	0.057	0.327	0.630	17.473	14.199	14.244	
*-----	36 0.0	100 0.0	420000.	0.192	-0.161	298000.	0.228	0.496	0.630	17.474	14.154	14.199	
*-----	36 15.0	100 0.0	421000.	0.469	0.116	325000.	-0.234	0.034	0.630	17.474	14.109	14.154	
*-----	36 30.0	100 0.0	421000.	0.116	-0.237	353000.	-0.067	0.200	0.630	17.475	14.064	14.109	
*-----	36 45.0	100 0.0	422000.	0.393	0.040	381000.	0.097	0.363	0.630	17.476	14.018	14.064	
*-----	37 0.0	100 0.0	422000.	0.040	-0.313	409000.	0.259	0.524	0.630	17.477	13.972	14.018	
*-----	33 30.0	100 15.0	391000.	0.086	-0.311	21000.	0.084	0.398	0.630	17.466	14.592	14.634	
*-----	33 45.0	100 15.0	392000.	0.319	-0.078	49000.	0.254	0.567	0.630	17.467	14.549	14.592	
*-----	34 0.0	100 15.0	393000.	0.552	0.156	76000.	-0.204	0.109	0.630	17.468	14.506	14.549	
*-----	34 15.0	100 15.0	393000.	0.156	-0.241	104000.	-0.030	0.281	0.630	17.469	14.463	14.506	
*-----	34 30.0	100 15.0	394000.	0.389	-0.008	132000.	0.144	0.454	0.630	17.469	14.420	14.463	
*-----	34 45.0	100 15.0	395000.	0.622	0.226	160000.	0.318	0.627	0.630	17.470	14.376	14.420	
*-----	35 0.0	100 15.0	395000.	0.226	-0.171	187000.	-0.138	0.170	0.630	17.471	14.333	14.376	
*-----	35 15.0	100 15.0	396000.	0.459	0.062	215000.	0.036	0.343	0.630	17.472	14.288	14.333	
*-----	35 30.0	100 15.0	396000.	0.062	-0.335	243000.	0.209	0.516	0.630	17.472	14.244	14.288	
*-----	35 45.0	100 15.0	397000.	0.295	-0.102	270000.	-0.246	0.057	0.630	17.473	14.199	14.244	
*-----	36 0.0	100 15.0	398000.	0.528	0.131	298000.	-0.077	0.228	0.630	17.474	14.154	14.199	
*-----	36 15.0	100 15.0	398000.	0.131	-0.266	326000.	0.092	0.396	0.630	17.474	14.109	14.154	
*-----	36 30.0	100 15.0	399000.	0.365	-0.032	354000.	0.260	0.563	0.630	17.475	14.064	14.109	
*-----	36 45.0	100 15.0	400000.	0.598	0.201	381000.	-0.205	0.097	0.630	17.476	14.018	14.064	
*-----	37 0.0	100 15.0	400000.	0.201	-0.197	409000.	-0.042	0.259	0.630	17.477	13.972	14.018	
*-----	36 15.0	100 30.0	376000.	0.423	-0.018	326000.	-0.247	0.092	0.630	17.474	14.109	14.154	
*-----	36 30.0	100 30.0	377000.	0.612	0.171	354000.	-0.078	0.260	0.630	17.475	14.064	14.109	
*-----	36 45.0	100 30.0	377000.	0.171	-0.270	382000.	0.088	0.425	0.630	17.476	14.018	14.064	
*-----	37 0.0	100 30.0	378000.	0.360	-0.081	410000.	0.252	0.588	0.630	17.477	13.972	14.018	
*-----	36 15.0	100 45.0	353000.	0.084	-0.401	327000.	0.008	0.383	0.630	17.474	14.109	14.154	
*-----	36 30.0	100 45.0	354000.	0.229	-0.256	355000.	0.178	0.552	0.630	17.475	14.064	14.109	
*-----	36 45.0	100 45.0	355000.	0.374	-0.111	382000.	-0.285	0.088	0.630	17.476	14.018	14.064	
*-----	37 0.0	100 45.0	356000.	0.519	0.033	410000.	-0.120	0.252	0.630	17.477	13.972	14.018	
*-----	36 15.0	101 0.0	331000.	0.374	-0.155	327000.	-0.403	0.008	0.630	17.474	14.109	14.154	
*-----	36 30.0	101 0.0	332000.	0.475	-0.055	355000.	-0.232	0.178	0.630	17.475	14.064	14.109	
*-----	36 45.0	101 0.0	333000.	0.576	0.046	383000.	-0.063	0.345	0.630	17.476	14.018	14.064	

TABLE F-2. OKLAHOMA COORDINATE SYSTEM(ONIZONE)
GRID CONSTRUCTION TABLES
15.0 MINUTE QUAD MAPS(SCALE 1:62500)
[J]GRID INTERVAL: 1000. METERS

MAP IDENTIFICATION			1ST VERTICAL GRID			1ST HORIZONTAL GRID				MAP DIMENSIONS(INCHES)		
	[B] LATITUDE	[C] LONGITUDE	[D] VALUE	DISPLACEMENT (INCHES)		[G] VALUE	DISPLACEMENT (INCHES)		(K)MAP GRID INTERVAL	(L)	HORIZONTAL	
[A]NAME	(DEGS MINS)	(DEGS MINS)	(METERS)	[E]SW	[F]NW	(METERS)	[H]SW	[I]SE	(INCHES)	VERTICAL	[M]TOP	[N]BOTTOM
*-----	37 0.0	101 0.0	333000.	0.046	-0.483	411000.	0.103	0.510	0.630	17.477	13.972	14.018
*-----	36 15.0	101 15.0	308000.	0.033	-0.541	328000.	-0.219	0.227	0.630	17.474	14.109	14.154
*-----	36 30.0	101 15.0	309000.	0.089	-0.484	356000.	-0.047	0.398	0.630	17.475	14.064	14.109
*-----	36 45.0	101 15.0	310000.	0.146	-0.427	384000.	0.123	0.567	0.630	17.476	14.018	14.064
*-----	37 0.0	101 15.0	311000.	0.203	-0.371	411000.	-0.339	0.103	0.630	17.477	13.972	14.018
*-----	36 15.0	101 30.0	286000.	0.320	-0.297	329000.	-0.071	0.411	0.630	17.474	14.109	14.154
*-----	36 30.0	101 30.0	287000.	0.333	-0.285	357000.	0.103	0.583	0.630	17.475	14.064	14.109
*-----	36 45.0	101 30.0	288000.	0.346	-0.272	384000.	-0.356	0.123	0.630	17.476	14.018	14.064
*-----	37 0.0	101 30.0	289000.	0.358	-0.260	412000.	-0.187	0.291	0.630	17.477	13.972	14.018
*-----	36 15.0	101 45.0	264000.	0.607	-0.055	330000.	0.041	0.559	0.630	17.474	14.109	14.154
*-----	36 30.0	101 45.0	265000.	0.575	-0.086	357000.	-0.414	0.103	0.630	17.475	14.064	14.109
*-----	36 45.0	101 45.0	266000.	0.544	-0.118	385000.	-0.240	0.274	0.630	17.476	14.018	14.064
*-----	37 0.0	101 45.0	267000.	0.512	-0.150	413000.	-0.070	0.443	0.630	17.477	13.972	14.018
*-----	36 15.0	102 0.0	241000.	0.262	-0.444	330000.	-0.513	0.041	0.630	17.474	14.109	14.154
*-----	36 30.0	102 0.0	242000.	0.186	-0.520	358000.	-0.336	0.216	0.630	17.475	14.064	14.109
*-----	36 45.0	102 0.0	243000.	0.111	-0.595	386000.	-0.161	0.390	0.630	17.476	14.018	14.064
*-----	37 0.0	102 0.0	244000.	0.035	-0.671	414000.	0.012	0.560	0.630	17.477	13.972	14.018
*-----	36 15.0	102 15.0	219000.	0.546	-0.205	331000.	-0.472	0.117	0.630	17.474	14.109	14.154
*-----	36 30.0	102 15.0	220000.	0.426	-0.324	359000.	-0.293	0.295	0.630	17.475	14.064	14.109
*-----	36 45.0	102 15.0	221000.	0.306	-0.444	387000.	-0.116	0.470	0.630	17.476	14.018	14.064
*-----	37 0.0	102 15.0	222000.	0.186	-0.564	414000.	-0.572	0.012	0.630	17.477	13.972	14.018
*-----	36 15.0	102 30.0	196000.	0.197	-0.597	332000.	-0.467	0.158	0.630	17.474	14.109	14.154
*-----	36 30.0	102 30.0	197000.	0.034	-0.761	360000.	-0.286	0.337	0.630	17.475	14.064	14.109
*-----	36 45.0	102 30.0	199000.	0.500	-0.294	388000.	-0.107	0.514	0.630	17.476	14.018	14.064
*-----	37 0.0	102 30.0	200000.	0.336	-0.458	415000.	-0.561	0.058	0.630	17.477	13.972	14.018
*-----	36 15.0	102 45.0	174000.	0.476	-0.361	333000.	-0.498	0.163	0.630	17.474	14.109	14.154
*-----	36 30.0	102 45.0	175000.	0.270	-0.568	361000.	-0.315	0.344	0.630	17.475	14.064	14.109
*-----	36 45.0	102 45.0	176000.	0.062	-0.776	389000.	-0.134	0.523	0.630	17.476	14.018	14.064
*-----	37 0.0	102 45.0	178000.	0.485	-0.354	416000.	-0.586	0.069	0.630	17.477	13.972	14.018
*-----	36 15.0	103 0.0	151000.	0.126	-0.756	334000.	-0.565	0.132	0.630	17.474	14.109	14.154
*-----	36 30.0	103 0.0	153000.	0.505	-0.378	362000.	-0.379	0.316	0.630	17.475	14.064	14.109
*-----	36 45.0	103 0.0	154000.	0.253	-0.630	390000.	-0.196	0.497	0.630	17.476	14.018	14.064
*-----	37 0.0	103 0.0	155000.	0.001	-0.882	417000.	-0.646	0.045	0.630	17.477	13.972	14.018
*-----	36 15.0	103 15.0	129000.	0.404	-0.523	335000.	-0.667	0.066	0.630	17.474	14.109	14.154
*-----	36 30.0	103 15.0	130000.	0.107	-0.819	363000.	-0.479	0.252	0.630	17.475	14.064	14.109
*-----	36 45.0	103 15.0	132000.	0.442	-0.485	391000.	-0.293	0.435	0.630	17.476	14.018	14.064
*-----	37 0.0	103 15.0	133000.	0.146	-0.781	419000.	-0.111	0.615	0.630	17.477	13.972	14.018

Appendix G

PROGRAM LAMGEN

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      PROGRAM LAMGEN

C     GENERATE LATITUTE AND LONGITUTE DEPENDENT
C     PARAMETERS FOR LAMBERT PROJECTION

      DOUBLE PRECISION THETA,R,PHI,TANZ2,RB,K,C1,C4,C3,C4,C5,C6,
     *  C7,PHIRAD,X1,PI,N,SINPHI,YP,SLOG,PHIMIN,THESEC
      DIMENSION        R(301),THETA(601),K(301)
      INTEGER*4        PHIDEG,PHIMN,LAMMIN,LAMDEG,PHINO,PHIIT
      INTEGER*4        THEDEG,THEMIN,LAMIT,LAMNO

      PI=3.141592653600

C     THE FOLLOWING CONSTANTS DEFINE LONGITUDE
C     RANGE 94 DEG THRU 104 DEG
      LAMIT   =5640    !DEFINE LOW VALUE FOR LONGITUDE IN MINUTES
      LAMNO   =601     !NUMBER OF LONGITUDE VALUES
C     THE FOLLOWING CONSTANTS DEFINE LATITUDE
C     RANGE 33 DEG  THRU 38 DEG
      PHIIT   =1980    !INITIAL VALUE OF LATITUDE IN MINUTES
      PHINO   =301     !NUMBER OF LATITUDE VALUES

      INCLUDE 'CN3436.FTN'
C***FILE CN3436.FTN LAST EDITTED 5/5/77 BY J.COOK***
C     CONSTANTS USED FOR LAMBERT PROJECTION AT 34 20
C     AND 36 20 PARALLELS
C        C1       =0.578362232100
C        C2       =3528000D0
C        C3       =13161096.97D0
C        C4       =0.082271054200
C        C5       =0.041135927100
C        C6       =6378206.400
C        C7       =0.006768657997291D0
C        RB       =9227392.691D0

C     FIRST LOOP THRU LATITUDE VALUES
      NPAGE=0
      TDS      =0      !INITIALIZE TABULAR DIFFERENCE FOR 1 SECOND
      DO 100  J=1,PHINO
      IF (MOD(J,35).NE.1) GO TO 80
      NPAGE=NPAGE+1
      PRINT 8000,NPAGE
8000  FORMAT('1',6X,'TABLE B-1.',T55,'PAGE',I3)
      PRINT 9000
      PRINT 9009
      PRINT 9010
80    CONTINUE
      PHIMIN  =PHIIT+J-1       !DEFINE LATITUDE IN MINUTES
      PHIRAD  =(PHIMIN/21600)*2*PI     !DEFINE LATITUDE IN RADIANS
      SINPHI  =DSIN(PHIRAD)
      X1      =C4*SINPHI
      TANZ2   =((1+X1)/(1-X1))**C5/DTAN(PI/4+PHIRAD/2)
      R(J)    =C3*TANZ2**C1
      N       =C6/DSQRT(1-C7*SINPHI**2)
      K(J)    =C1*R(J)/(N*DCOS(PHIRAD))        !SCALE RATIO
      YP      =RB-R(J)         !DEFINE Y-PRIME
```

```
      IF(J.GT.1)      TDS=(R(J-1)-R(J))/60 !DEFINE TABULAR DIFFERENCE
      SLOG    =DLOG10(R(J))*10**7      !DEFINE LOG OF SCALE
      PHIDEG  =PHIMIN/60       !WHOLE DEGREES
      PHIMN   =PHIMIN-60*PHIDEG        !WHOLE MINUTES REMAINING
      IF(MOD(PHIMN,60).EQ.0.OR.MOD(J,5).EQ.1) GO TO 90
      PRINT 9008
      GO TO 95
90    CONTINUE
      PRINT 9001, PHIDEG
95    CONTINUE
      PRINT 9002, PHIMN,R(J),TP,TDS,SLOG,R(J)
100   CONTINUE
C
C     NOW DO LONGITUDE TABLE
      DO 200 J=1,LAMNO
200   THETA(J)        =C1*(C2-(LAMIT+J-1)*60)
      NPAGE=0
C
C     PRINT THETAS
      DO 300 J=1,LAMNO
      IF (MOD(J,35).NE.1) GO TO 280 !PRINT HEADING
      NPAGE=NPAGE+1
      PRINT 8001,NPAGE
8001  FORMAT('1',6X,'TABLE B-2.',155,'PAGE',I3)
      PRINT 9000
      PRINT 9005
      PRINT 9010
280   CONTINUE
      LAMMIN  =LAMIT+J-1
      LAMDEG  =LAMMIN/60
      LAMMIN  =LAMMIN-LAMDEG*60
      IF (LAMMIN.EQ.0.OR.MOD(J,5).EQ.1) GO TO 290
      PRINT 9010
      GO TO 295
290   CONTINUE
      PRINT 9006, LAMDEG
295   CONTINUE
      THEDEG  =THETA(J)/3600
      THEMIN  =THETA(J)/60-60*THEDEG
      THESEC  =THETA(J)-3600*THEDEG-60*THEMIN
      IF (THEMIN.LT.0) THEMIN=-THEMIN
      IF (THESEC.LT.0) THESEC=-THESEC
      PRINT 9007, LAMMIN,THEDEG,THEMIN,THESEC
300   CONTINUE
C
C     NOW WRITE R AND THETA TABLES TO OUTPUT FILE
      OPEN (UNIT=1,NAME='TB3436.DAT',TYPE='NEW',FORM='UNFORMATTED')
      WRITE (1) PHIIT,PHINO,(R(J),J=1,PHINO)
      WRITE (1) LAMIT,LAMNO,(THETA(J),J=1,LAMNO)
      CLOSE (UNIT=1)
9001  FORMAT(I4)
9002  FORMAT('+',3X,I4,F13.2,F11.2,F11.5,F9.1,F11.7)
9008  FORMAT(' ')
9000  FORMAT('+',1HX,'LAMBERT PROJECTION FOR OKLAHOMA',
     *  /,1X,'STANDARD PARALLELS 34 DEGS 20 MINS AND 36 DEGS 20 MINS')
9009  FORMAT( //,22X,'T-PRIME     TABULAR',
```

```
     *  /,21X,'Y VALUE ON  DIFFERENCE  SCALE IN',
     *  /,22X,'CENTRAL     FOR 1 SEC   UNITS OF  SCALE',
     *  /,' LATITUDE',13X,'MERIDIAN    OF LATITUDE 7TH PLACE EXPRESSED',
     *  /,' DEG MIN   R (METERS)  (METERS)   (METERS)    OF LOGS   AS A ',
     *  'RATIO')
9005   FORMAT( //,12X,'LONGITUDE      THETA',
     *  /,12X,'DEG  MIN    DEG MIN  SECONDS')
9006    FORMAT(12X,I3)
9010    FORMAT(' ')
9007    FORMAT('+',14X,I5,I6,I4,F9.4)
9011    FORMAT(1H1,5E15.5,(/1X,5E15.5))
        END
```

SUBROUTINE LOAD

```
                C*******************************************************************************
                C
0001                 SUBROUTINE      LOAD
                C
                C     SUBROUTINE LOAD READS INTO CORE ARRAYS NEEDED FOR CONVERSTION
                C     TO AND FROM LAMBERT CO-ORDINATES
                C
0002                 COMMON/GRDBLK/ PHIIT1,PHINO1,R1(301),LAMIT1,LAMNO1,THETA1(601),
                    *  L1,RE1,CM1,C01,
                    *  PI
                C
0003                 DOUBLE PRECISION R1,THETA1,L1,RE1
0004                 DOUBLE PRECISION PI
                C
0005                 INTEGER*4 PHIIT1,PHINO1,LAMIT1
                C
0006                 REAL CM1,C01
                C
                C
0007                 PI=3.141592653600
                C
                C     FIRST DEFINE SYSTEM CONSTANTS
0008                 L1=0.576362232100
0009                 RE1=9227392.69100
0010                 CM1=98.0
0011                 C01=600000
                C
0012                 READ (1) PHIIT1,PHINO1,(R1(J),J=1,PHINO1)
0013                 READ (1) LAMIT1,LAMNO1,(THETA1(J),J=1,LAMNO1)
                C
0014                 RETURN
0015                 END
```

SUBROUTINE LOADTM

```
                      C
                      C*************************************************************************
                      C
                      C       THIS PROGRAM BUILDS THE ARRAY A USED TO
                      C       CONVERT FROM UTM COORDINATES TO GEODETIC
                      C       COORDINATES AND VICE VERSA
                      C
      0001                    SUBROUTINE LOADTM(ISPHER)                                       THMCOF  1
                      C SETS UP COEFFICIENTS FOR CONVERTING GEODETIC TO RECTIFYING LATITUDE    THMCOF  2
                      C AND CONVERSELY                                                        THMCOF  3
      0002                    DOUBLE PRECISION A(16),FAC,B(4)                                 THMCOF  4
      0003                    COMMON /A/A
                      C                                                                       UTM   43
                      C     DETERMINE SPHEROID PARAMETERS FROM ISPHER INPUT                   UTM   44
                      C                              0=CLARK 1866(DEFAULT)                    UTM   45
                      C                              1=CLARK1880                              UTM   46
                      C                              2=BESSEL                                 UTM   47
                      C                              3=MODIFIED MURCURY 1968                  UTM   48
                      C                              4=INTERNATIONAL                          UTM   49
                      C     IF A SPHEROID IS REQUIRED THAT IS NOT DEFINED HERE, IT IS REC-    UTM   50
                      C     OMMENDED THAT THE APPROPRIATE SEMI-MAJOR AND SEMI-MINOR AXES      UTM   51
                      C     VALUES BE SUBSTITUTED FOR ONE OF THE UNUSED PARAMETER SETS.       UTM   52
                      C                                                                       UTM   53
                      C                                                                       UTM   54
      0004                    A(5)=5.0D5                                                      UTM   55
      0005                    A(6)=0.0D0                                                      UTM   56
      0006                    A(7)=0.0D0                                                      UTM   59
      0007                    A(8)=0.9996D0                                                   UTM   60
      0008                    GO TO(11,12,13,14),ISPHER                                       UTM   61
      0009                    A(15)=6378206.4D0                                               UTM   62
      0010                    B(1)=6356583.8D0                                                UTM   63
      0011                    GO TO 20                                                        UTM   64
      0012                 11 A(15)=6378249.145D0                                             UTM   65
      0013                    B(1)=6356514.8695D0                                             UTM   66
      0014                    GO TO 20                                                        UTM   67
      0015                 12 A(15)=6377397.155D0                                             UTM   68
      0016                    B(1)=6356078.96284D0                                            UTM   69
      0017                    GO TO 20                                                        UTM   70
      0018                 13 A(15)=6378150.0D0                                               UTM   71
      0019                    B(1)=6356768.337D0                                              UTM   72
      0020                    GO TO 20                                                        UTM   73
      0021                 14 A(15)=6378388.0D0                                               UTM   74
      0022                    B(1)=6356911.9461D0                                             UTM   75
      0023                 20 A(16)= ((A(15)-B(1))/A(15))*((A(15)+B(1))/A(15))               UTM   76
      0024                  6 A(10)=(((A(16)*(7.0D0/3.2D1)+(5.0D0/1.6D1))*A(16)+0.5D0)*A(16)  THMCOF  5
                             * +1.0D0)*A(16)*0.25D0                                           THMCOF  6
      0025                    A(1)=-(((A(10)*(1.95D2/6.4D1)+3.25D0)*A(10)+3.75D0)*A(10)+3.0D0)* THMCOF  7
                             * A(10)                                                          THMCOF  8
      0026                    A(2)=(((1.455D3/3.2D1)*A(10)+(7.0D1/3.0D0))*A(10)+7.5D1*A(10)**2 THMCOF  9
      0027                    A(3)=-((7.0D1/3.0D0)+A(10)*(9.45D2/8.0D0))*A(10)**3             THMCOF10
      0028                    A(4)=(3.15D2/4.0D0)*A(10)**4                                    THMCOF11
      0029                    A(11)=(((7.75D0-(6.57D2/6.4D1)*A(10))*A(10)-5.25D0)*A(10)+3.0D0)* THMCOF12
                             * A(10)                                                          THMCOF13
      0030                    A(12)=(((5.045D3/3.2D1)*A(10)-(1.51D2/1.0D0))*A(10)+10.5D0)*    THMCOF14
                             * A(10)**2                                                       THMCOF15
      0031                    A(13)=((1.51D2/3.0D0)-(3.291D3/8.0D0)*A(10))*A(10)**3           THMCOF16
      0032                    A(14)=(1.097D3/4.0D0)*A(10)**4                                  THMCOF17
                      C       A(1) TO A(4) ARE FOR GEODETIC TO RECTIFYING LATITUDE            THMCOF18
```

```
                C       CONVERSION WHILE A(11) TO A(14) ARE COEFFICIENTS FOR          TMCOF19
                C       RECTIFYING TO GEODETIC CONVERSION.                            TMCOF20
0033                    FAC=A(10)*A(10)                                               TMCOF21
0034                    A(10)=(((2.25D2/6.4D1)*FAC+2.25D0)*FAC+1.0D0)*(1.0D0-FAC)*    TMCOF22
                      * (1.0D0-A(10))*A(15)                                           TMCOF23
                C     A(10) IS NOW SET TO RADIUS OF SPHERE WITH GREAT CIRCLE LENGTH   TMCOF24
                C       EQUAL TO SPHEROID MERIDIAN LENGTH.                            TMCOF25
0035                    RETURN                                                        TMCOF26
0036                    END                                                           TMCOF27-
```

SUBROUTINE SP3436

```
                C*************************************************************************
                C
0001                  SUBROUTINE SP3436(X,Y,PHI,LAMDA,IER)
                C
                C      THIS SUBROUTINE CONVERTS FROM GEOGRAPHIC CO-ORDINATES
                C      PHI (LAT IN DEGS) AND LAMDA (LONG IN DEGS) TO STATE PLANE
                C      CO-ORDINATES X,Y BASED ON THE LAMBERT PROJECTION WITH STANDARD
                C      PARALLELS AT LATITUDES OF 34 20 AND 36 20.  IER=0 IS RETURNED
                C      IF THE COMPUTATION IS COMPLETED NORMALLY; OTHERWISE IER=1
                C
                C
0002                  COMMON/GRDBLK/ PHIIT1,PHINO1,R1(301),LAMIT1,LAMNO1,THETA1(601),
                     *  L1,RB1,CM1,C01,
                     *  PI
                C
0003                  DOUBLE PRECISION R1,THETA1,L1,RB1
0004                  DOUBLE PRECISION PI
                C
0005                  INTEGER*4 PHIIT1,PHINO1,LAMIT1
                C
0006                  REAL CM1,C01
                C
                C
0007                  REAL PHI,LAMDA,X,Y,XLAM,XPHI
0008                  INTEGER IER
0009                  DOUBLE PRECISION XTHETA,XR,RTHETA
                C
0010                  CALL THET1(LAMDA,RTHETA,IER)
0011                  IF(IER.NE.0) RETURN
0012                  CALL RF1(PHI,XR,IER)
0013                  IF(IER.NE.0) RETURN
0014                  X=C01 + XR * DSIN(RTHETA)
0015                  Y=RB1 - XR * DCOS(RTHETA)
0016                  RETURN
0017                  END
```

SUBROUTINE GC3436

```
                C
                C*****************************************************************
                C
0001                  SUBROUTINE GC3436(PHI,LAMDA,X,Y,IER)
                C
                C      THIS SUBROUTINE RETURNS THE GEOGRAPHIC CO-ORDINATES
                C      PHI (LATITUDE IN DEGREES) AND LAMDA (LONGITUDE IN DEGREES)
                C      CORRESPONDING TO THE STATE PLANE CO-ORDINATES X AND Y
                C      (BOTH IN METERS), BASED ON THE LAMBERT PROJECTION WITH STANDARD
                C      PARALLELS AT LATITUDES 34 20 AND 36 20
                C
                C      IER IS AN ERROR RETURN INDICATOR WHICH IS SET TO ZERO
                C      FOR A NORMAL COMPUTATION; OTHERWISE TO 1
                C
                C
0002                  COMMON/GRDBLK/ PHIIT1,PHINO1,R1(301),LAMIT1,LAMNO1,THETA1(601),
                     *  L1,RB1,CM1,C01,
                     *  PI
                C
0003                  DOUBLE PRECISION R1,THETA1,L1,RB1
0004                  DOUBLE PRECISION PI
                C
0005                  INTEGER*4 PHIIT1,PHINO1,LAMIT1
                C
0006                  REAL CM1,C01
                C
                C
0007                  REAL PHI,LAMDA,X,Y
0008                  INTEGER IER
0009                  DOUBLE PRECISION XTHETA,XR
0010                  IER=1
0011                  XTHETA=DATAN((X-C01)/(RB1-Y))
0012                  XR=(RB1-Y)/DCOS(XTHETA)
0013                  CALL BSER(XR,R1,PHIIT1,PHINO1,PHI,IER)
0014                  IF (IER.NE.0) RETURN
0015                  PHI=PHI/60
0016                  LAMDA=CM1-(XTHETA/L1)*360/(2*PI)
0017                  RETURN
0018                  END
```

SUBROUTINE OCSUTM

```
                C
                C*************************************************************************************
0001                 SUBROUTINE OCSUTM(X,Y,E,N,Z,IER)
                C
                C    THIS SUBROUTINE CONVERTS THE UTM COORDINATES
                C    (E,N) IN ZONE Z TO OKLAHOMA COORDINATE SYSTEM
                C    COORDINATES (X,Y).  IER=0 IS A NORMAL ERROR
                C    RETURN
                C
0002                 DOUBLE PRECISION E,N,SK,THET,SLAT,SLON
0003                 REAL Z,X,Y,LAT,LON
0004                 INTEGER IER
                C
0005                 E=1000.*E
0006                 N=1000.*N
0007                 CALL GCUTM(N,E,Z,SLAT,SLON,IER,SK,THET)
0008                 IF(IER.NE.0) RETURN
0009                 LAT=SLAT/3600.
0010                 LON=SLON/3600.
0011                 CALL SP3436(X,Y,LAT,LON,IER)
0012                 RETURN
0013                 END
```

SUBROUTINE UTMGC

```
                C
                C*************************************************************************
                C
                C       THIS PROGRAM CONVERTS GEODETIC COORDINATES TO UTM
                C       COORDINATES
                C
0001                    SUBROUTINE UTMGC(SLAT,SLON,ZONE,NORTH,EAST,IERR,SK,THET)          THMFWD 1
                C CONVERTS LATITUDE AND LONGITUDE IN SECONDS (SLAT AND SLON) TO X AND     THMFWD 2
                C Y ON TRANSVERSE MERCATOR PROJECTION. A(1) TO A(4) ARE COEFFICIENTS      THMFWD 3
                C USED TO CONVERT GEODETIC LATITUDE TO RECTIFYING LATITUDE, A(5) IS       THMFWD 4
                C FALSE EASTING, A(6) IS FALSE NORTHING,A(8) IS SCALE FACTOR AT CENTRAL   THMFWD 5
                C     MERIDIAN.  A(9) IS CENTRAL MERIDIAN IN SECONDS. A(10) IS RADIUS     THMFWD 6
                C    OF SPHERE HAVING A GREAT CIRCLE LENGTH EQUAL TO SPHEROID MERIDIAN    THMFWD 7
                C     LENGTH.  A(11) TO A(14) ARE COEFFICIENTS TO CONVERT RECTIFYING      THMFWD 8
                C     LATITUDE TO GEODETIC LATITUDE.  A(15) IS SEMIMAJOR AXIS OF          THMFWD 9
                C    SPHEROID, AND A(16) IS ECCENTRICITY SQUARED.  IERR IS SET TO 1       THMFWD10
                C     IF LATEXCEEDS 64 DEGREES, OR LONG EXCEEDS 0.16 RADIANS            THMFWD11
                C                                                                       THMFWD12
0002                    DOUBLE PRECISION SLAT,SLON,    A(16),B(12),SINP,COSP,RN,T,TS,ETAS,THMFWD13
                       XNORTH,EAST,SK,THET                                              THMFWD14
0003                    DOUBLE PRECISION UTZ
0004                    COMMON /A/A
0005                    IERR=0                                                          THMFWD15
                C                                                                       UTM  85
                C     TEST FOR ZONE INPUT ON GEODETIC TO UTM INDICATING OVER RIDE OF    UTM  86
                C     NORMAL 6 DEGREE LONGITUDE BAND.                                   UTM  87
                C                                                                       UTM  88
0006                    IF( ZONE.EQ.0)GO TO 35                                          UTM  89
                C     COMPUTE CENTRAL MERIDIAN IN SECONDS FOR ENFORCED ZONE.            UTM  92
0007                 25 UTZ=30.0D0-  ABS(ZONE)                                          UTM  95
0008                    A(9)=((UTZ*6.0D0)+3.0D0)*3600.0D0                               UTM  96
0009                    GO TO 40                                                        UTM 102
                C                                                                       UTM 103
                C     COMPUTE UTM ZONE(IZONE) AND CENTRAL MERIDIAN IN SECONDS(A9) FOR   UTM 104
                C     GEODETIC TO UTM CONVERSION WHERE ZONE IS NOT INPUT.               UTM 105
                C                                                                       UTM 106
0010                 35 ILON=SLON/(3600*6)
0011                    ZONE=30.-ILON
0012                    UTZ=30.0D0- ZONE                                                UTM 109
0013                    A(9)=((UTZ*6.0D0)+3.0D0)*3600.0D0                               UTM 110
0014                 40 CONTINUE
0015                    IF(DABS(SLAT)-302400.0D0) 8,8,4                                 THMFWD16
0016                  4 IERR=1                                                          THMFWD17
0017                    EAST=0.0D0                                                      THMFWD18
0018                    NORTH=0.0D0                                                     THMFWD19
0019                    GO TO 99                                                        THMFWD20
0020                  8 B(10)=(A(9)-SLON) *4.848136811095360-6                          THMFWD21
0021                    IF(DABS(B(10))-0.16D0)10,10,4                                   THMFWD22
0022                 10 B(9)=SLAT*4.848136811095360-6                                   THMFWD23
0023                    SINP=DSIN(B(9))                                                 THMFWD24
0024                    COSP=DCOS(B(9))                                                 THMFWD25
0025                    RN=A(15)/DSQRT(1.0D0-A(16)*SINP*SINP)                           THMFWD26
0026                    T=SINP/COSP                                                     THMFWD27
0027                    TS=T*T                                                          THMFWD28
0028                    B(11)=COSP*COSP                                                 THMFWD29
0029                    ETAS=A(16)*B(11)/(1.0D0-A(16))                                  THMFWD30
0030                    B(1)=RN*COSP                                                    THMFWD31
0031                    B(3)=(1.0D0-TS+ETAS)*B(1)*B(11)/6.0D0                           THMFWD32
```

```
      B(5)=((TS-18.0D0)*TS+5.0D0+(14.0D0-58.0D0*TS)*ETAS)*B(1)*B(11)*   THFWD33
     * B(11)/120.0D0                                                    THFWD34
      B(7)=(((179.0D0-TS)*TS-479.0D0)*TS+61.0D0)*B(1)*B(11)**3/5040.0D0 THFWD35
      B(12)=B(10)*B(10)                                                 THFWD36
      EAST=(((B(7)*B(12)+B(5))*B(12)+B(3))*B(12)+B(1))*B(10)*A(8)+      THFWD37
     XA(5)                                                              THFWD38
      B(2)=RN*B(11)*T/2.0D0                                             THFWD39
      B(4)=(ETAS*(9.0D0+4.0D0*ETAS)+5.0D0-TS)*B(2)*B(11)/12.0D0         THFWD40
      B(6)=((TS-58.0D0)*TS+61.0D0+(270.0D0-330.0D0*TS)*ETAS)*B(2)*      THFWD41
     * B(11)*B(11)/360.0D0                                              THFWD42
      B(8)=(((543.0D0-TS)*TS-3111.0D0)*TS+1385.0D0)*B(2)*B(11)**3/      THFWD43
     * 20160.0D0                                                        THFWD44
      NORTH=(((B(8)*B(12)+B(6))*B(12)+B(4))*B(12)+B(2))*B(12)+          THFWD45
     * ((((A(4)*B(11)+A(3))*B(11)+A(2))*B(11)+A(1))*SINP*COSP+B(9))     THFWD46
     * *A(10)                                                           THFWD47
      NORTH=(NORTH-A(7))*A(8)+A(6)                                      THFWD48
C                                                                       THFWD49
C     COMPUTE SCALE FACTOR  SK                                          THFWD50
C                                                                       THFWD51
      SK=(((((-24.0D0*ETAS-48.0D0)*ETAS-28.0D0)*ETAS-4.0D0)*TS)+       THFWD52
     X(((4.0D0*ETAS+13.0D0)*ETAS+14.0D0)*ETAS+5.0D0))*((B(10)**4)/24.0D0THFWD53
     X)*B(11)*B(11)+(1.0D0+ETAS)*B(11)*(B(10)*B(10))/2.0D0+1.0D0       THFWD54
      SK=SK*A(8)                                                        THFWD55
C     COMPUTE CONVERGENCE ANGLE--THET                                   THFWD56
C                                                                       THFWD57
      THET=(B(10)*SINP*(1.0D0+((B(10)**2)*B(11)/3.0D0)*(1.0D0+3.0D0     THFWD58
     X*ETAS+2.0D0*ETAS**2)+(B(10)**4)*(((B(11)**2)/15.0D0)*(2.0D0-TS)))* THFWD59
     X206264.806247096400                                               THFWD60
   99 RETURN                                                            THFWD61
      END                                                               THFWD62-
```

SUBROUTINE GCUTM

```
C
C*****************************************************************************
C
C       THIS PROGRAM CONVERTS UTM COORDINATES TO GEODETIC
C       COORDINATES
      SUBROUTINE GCUTM(NORTH,EAST,ZONE,SLAT,SLON,IERR,SK,THET)          TMINV 1
C COMPUTES LATITUDE AND LONGITUDE IN SECONDS (SLAT AND SLON) FROM GIVEN TMINV 2
C RECTANGULAR COORDINATES X AND Y FOR TRANSVERSE MERCATOR PROJECTION.   TMINV 3
C A IS ARRAY OF PARAMETERS USED IN COMPUTATION, DESCRIBED BY COMMENTS   TMINV 4
C FOR TMFWD SUBROUTINE. IERR SET TO 1 IF GRID DISTANCE FROM CENTRAL     TMINV 5
C MERIDIAN EXCEEDS 0.2 OF SPHEROID SEMIMAJOR AXIS NUMERICALLY OR IF     TMINV 6
C ABSOLUTE VALUE OF RECTIFYING LATITUDE EXCEEDS 1.47 RADIANS. SOUTH     TMINV 7
C LATITUDES AND EAST LONGITUDE ARE NEGATIVE.                            TMINV 8
      DOUBLE PRECISION     SLAT,SLON,A(16),B(12),SINW,COSW,RN,T,TS,ETAS,TMINV 9
     X NORTH,EAST,X,Y,SK,BM,BMS,THET                                    TMINV10
      DOUBLE PRECISION UTZ
      COMMON /A/A
C                                                                       UTM 124
C     COMPUTE CENTRAL MERIDIAN IN SECONDS FROM IZONE INPUT              UTM 125
C                                                                       UTM 126
  100 UTZ=30.0D0-ABS(ZONE)                                              UTM 127
      A(9)=((UTZ*6.0D0)+3.0D0)*3600.0D0                                 UTM 128
      Y=NORTH                                                           TMINV11
      X=EAST                                                            TMINV12
      IERR=0                                                            TMINV13
      B(9)=((A(5)-X)*1.0D-6)/A(8)                                       TMINV14
      IF (DABS(B(9))-1.0D-7*A(15)*2.0D0)5,5,4                           TMINV15
    4 IERR=1                                                            TMINV16
      SLAT=0.0                                                          TMINV17
      SLON=0.0                                                          TMINV18
      GO TO 99                                                          TMINV19
    5 B(10)=((Y-A(6))/A(8)+A(7))/A(10)                                  TMINV20
      IF(DABS(B(10))-1.47D0)10,10,4                                     TMINV21
   10 SINW=DSIN(B(10))                                                  TMINV22
      COSW=DCOS(B(10))                                                  TMINV23
      B(12)=COSW*COSW                                                   TMINV24
      B(11)=(((A(14)*B(12)+A(13))*B(12)+A(12))*B(12)+A(11))*SINW*COSW   TMINV25
     * +B(10)                                                           TMINV26
      SINW=DSIN(B(11))                                                  TMINV27
      COSW=DCOS(B(11))                                                  TMINV28
      RN=DSQRT(1.0D0-A(16)*SINW*SINW)*1.0D6/A(15)                       TMINV29
      T=SINW/COSW                                                       TMINV30
      TS=T*T                                                            TMINV31
      B(12)=COSW*COSW                                                   TMINV32
      ETAS=A(16)*B(12)/(1.0D0-A(16))                                    TMINV33
      B(1)=RN/COSW                                                      TMINV34
      B(2)=-T*(1.0D0+ETAS)*RN*RN/2.0D0                                  TMINV35
      B(3)=-(1.0D0+2.0D0*TS+ETAS)*B(1)*RN*RN/6.0D0                      TMINV36
      B(4)=(((-6.0D0-ETAS*9.0D0)*ETAS+3.0D0)*TS+(6.0D0-ETAS*3.0D0)*ETAS TMINV37
     * +5.0D0)*T*RN**4/24.0D0                                           TMINV38
      B(5)=((TS*24.0D0+ETAS*8.0D0+28.0D0)*TS+ETAS*6.0D0+5.0D0)*B(1)*    TMINV39
     * RN**4/120.0D0                                                    TMINV40
      B(6)=(((ETAS*45.0D0-45.0D0)*TS+ETAS*162.0D0-90.0D0)*TS            TMINV41
     * -ETAS*107.0D0-61.0D0)*T*RN**6/720.0D0                            TMINV42
      B(7)=-(((TS*720.0D0+1320.0D0)*TS+662.0D0)*TS+61.0D0)*B(1)*RN**6/  TMINV43
     * 5040.0D0                                                         TMINV44
      B(8)=(((TS*1575.0D0+4095.0D0)*TS+3633.0D0)*TS+1385.0D0)*T*RN**8/  TMINV45
     * 40320.0D0                                                        TMINV46
```

```
     B(10)=B(9)*B(9)                                                    TMINV47
     SLAT=((((B(8)*B(10)+B(6))*B(10)+B(4))*B(10)+B(2))*B(10)+B(11))*    TMINV48
    * 206264.806247096400                                               TMINV49
     SLON= (((B(7)*B(10)+B(5))*B(10)+B(3))*B(10)+B(1))*B(9)*            TMINV50
    * 206264.806247096400 + A(9)                                        TMINV51
     BN=B(9)*RN                                                         TMINV52
     BNS=BN**2                                                          TMINV53
     SK=1.0D0+((1.0D0+ETAS)/2.0D0)*BNS+(1.0D0+6.0D0*ETAS+9.0D0          TMINV54
    X*ETAS*ETAS+4.0D0*ETAS*ETAS*ETAS-24.0D0*ETAS*ETAS*TS-24.0D0         TMINV55
    X*ETAS*ETAS*ETAS*TS)*BNS*BNS/24.0D0+(BNS*BNS*BNS)/720.0D0           TMINV56
     SK=SK*A(8)                                                         TMINV57
C    COMPUTE CONVERGENCE ANGLE--THET                                    TMINV58
C                                                                       TMINV59
     THET=(((((((-24.0D0*ETAS-27.0D0)*ETAS-7.0D0)*ETAS+1.0D0)*ETAS)*TS TMINV60
    X)+(5.0D0*TS+3.0D0*TS**2)+((((11.0D0*ETAS+20.0D0)*ETAS+9.0D0)*     TMINV61
    XETAS+2.0D0)*ETAS)+2.0D0)*(BN**5)*T/15.0D0)+(T*BN)- (((45.0D0*TS    TMINV62
    X+105.0D0)*TS+77.0D0)*TS+17.0D0)*((BN**7)*T/315.0D0)-(((1.0D0+TS    TMINV63
    X-ETAS-2.0D0*ETAS**2)*BN**3)*T/3.0D0)                               TMINV64
     THET=-THET*206264.806247096400                                     TMINV65
  99 RETURN                                                             TMINV66
     END                                                                TMINV67-
```

SUBROUTINE BSER

```
                C*****************************************************************************
                C
0001                  SUBROUTINE BSER(X,Y,INIT,L,Z,IER)
                C
                C      SUBROUTINE BSER IS PASSED THE SEARCH VALUE X AND PERFORMS
                C      A BINARY SEARCH ON THE DOUBLE PRECISION ARRAY Y WHICH HAS A LENGTH
                C      OF L WORDS.  THE VALUE Z IS RETURNED AND IS CALCULATED AS
                C
                C         Z = ((X-Y(I))/(Y(I+1)-Y(I)) + INIT + I - 1
                C
                C      WHERE I IS THE LARGEST VALUE SUCH THAT X IS GREATER
                C      THAN Y(I) BUT LESS THAT Y(I+1).  BSER IS USED FOR INVERSE INTERPOLATION
                C      IN THE ARRAYS R AND THETA; THAT IS, GIVEN THE VALUE OF R OR THETA
                C      BSER RETURNS THE CORRESPONDING ARGUMENT.  IF X IS NOT IN THE RANGE
                C      Y(1) THROUGH Y(L), THE ERROR RETURN INDICATOR IER IS SET
                C      TO 1; OTHERWISE TO 0.
                C
0002                  DOUBLE PRECISION Y (1),X
                C
0003                  REAL Z,DEL
                C
0004                  INTEGER*4 INIT,L
                C
0005                  INTEGER IER,I,J1,J2,JX
                C
0006                  DEL=0
0007                  IER=1
0008                  IF(X.GT.Y(1)) RETURN
0009                  IF(X.LT.Y(L)) RETURN
0010                  IF(X.NE.Y(1)) GO TO 10
0011                  I=1
0012                  GO TO 100
0013            10    IF (X.NE.Y(L)) GO TO 20
0014                  I=L
0015                  GO TO 100
0016            20    J1=1
0017                  J2=L
0018            30    IF ((J2-J1).NE.1) GO TO 40
0019                  I=J1
0020                  GO TO 90
0021            40    JX=J1+(J2-J1)/2
0022                  IF (X.LE.Y(JX)) GO TO 50
0023                  J2=JX
0024                  GO TO 30
0025            50    IF (X.NE.Y(JX)) GO TO 60
0026                  I=JX
0027                  GO TO 100
0028            60    J1=JX
0029                  GO TO 30
0030            90    DEL=(X-Y(J1))/(Y(J2)-Y(J1))
0031            100    Z=(I+DEL) + INIT - 1
0032                  IER=0
0033                  RETURN
0034                  END
```

SUBROUTINE RF1

```
                C
                C*****************************************************************************
0001                 SUBROUTINE RF1(PHI,XR,IER)
                C
                C    THIS SUBROUTINE RETURNS THE VALUE R CORRESPONDING
                C    TO LATITUDE PHI (IN DEGREES). RX IS THE R ARRAY
                C    FROM WHICH THE RETURNED VALUE XR IS OBTAINED.
                C    PHINO IS THE LENGTH OF RX (IN DOUBLE FP WORDS).
                C    IER=1 IS RETURNED IF PHI OUTSIDE THE RANGE
                C    OF DEFINITION RX (AS DETERMINED BY PHIIT
                C    AND PHINO).
                C
0002                 COMMON/GROBLK/ PHIIT1,PHINO1,R1(301),LAMIT1,LAMNO1,THETA1(601),
                    *  L1,RB1,CM1,C01,
                    *  PI
                C
0003                 DOUBLE PRECISION R1,THETA1,L1,RB1
0004                 DOUBLE PRECISION PI
                C
0005                 INTEGER*4 PHIIT1,PHINO1,LAMIT1
                C
0006                 REAL CM1,C01
                C
                C
0007                 DOUBLE PRECISION RX,XR
0008                 REAL PHI,XPHI
0009                 INTEGER*4 IPHI
0010                 INTEGER IER
                C
0011                 IER=1
0012                 XPHI=PHI*60.-PHIIT1+1.
0013                 IPHI=XPHI
0014                 IF(IPHI.GT.PHINO1.OR.IPHI.LT.1) RETURN
0015                 XPHI=XPHI-IPHI
0016                 XR=R1(IPHI)+XPHI*(R1(IPHI+1)-R1(IPHI))
0017                 IER=0
0018                 RETURN
0019                 END
```

SUBROUTINE THET1

```
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                C*****************************************************************************
0001                  SUBROUTINE THET1(LAMDA,THETAX,IER)
                C
                C     THETAX RETURNED IN RADIANS
                C
0002                  COMMON/GRDBLK/ PHIIT1,PHINO1,R1(301),LAMIT1,LAMNO1,THETA1(601),
                     *  L1,RB1,CM1,C01,
                     *  PI
                C
0003                  DOUBLE PRECISION R1,THETA1,L1,RB1
0004                  DOUBLE PRECISION PI
                C
0005                  INTEGER*4 PHIIT1,PHINO1,LAMIT1
                C
0006                  REAL CM1,C01
                C
                C
0007                  DOUBLE PRECISION THETAX,XTHETA
0008                  INTEGER*4 ILAM
0009                  INTEGER IER
0010                  REAL XLAM,LAMDA
                C
0011                  IER=1
0012                  XLAM=LAMDA*60.-LAMIT1+1
0013                  ILAM=XLAM
0014                  XLAM=XLAM-ILAM
0015                  IF(ILAM.GT.LAMNO1.OR.ILAM.LT.1) RETURN
0016                  XTHETA=THETA1(ILAM)+XLAM*(THETA1(ILAM+1)-THETA1(ILAM))
0017                  THETAX=XTHETA*2.*PI/(360.*3600.)
0018                  IER=0
0019                  RETURN
0020                  END
```